GAS

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"Proud of the Achievement of the Men and Women of the Robertshaw Thermostat Company"

—Robert P. Patterson, Under Sec'y of War

Years of precision skill put into the manufacture of Robertshaw Thermostats now has its greatest reward. Quoted above, are the words of Under Secretary of War Patterson, in awarding Robertshaw the Army-Navy Production E for "high achievement in the production of war equipment." Wrote Mr. Patterson to John A. Robertshaw, President of Robertshaw Thermostat Company:

"The patriotism which you and your employees have shown by your remarkable production record is helping our country along the road to victory. The Army and Navy are proud of the achievement of the men and women of the Robertshaw Thermostat Company. May I extend to the Robertshaw Thermostat Company congratulations for accomplishing more than seemed reasonable or possible a year ago."

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THERMOSTAT COMPANY

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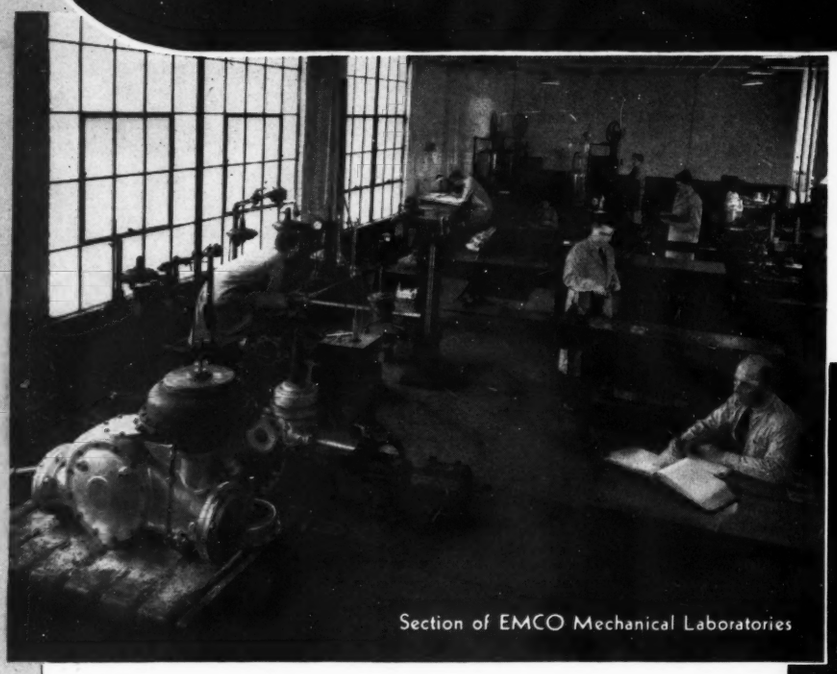

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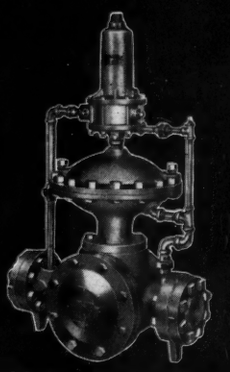

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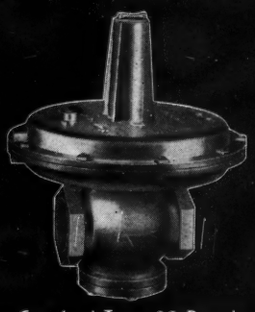
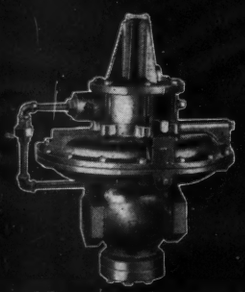


The Crawford Type 38 Regulator for Large Appliances, Industrial Furnace and Gas Engine Control



The EMCO "1001" Regulator for General Pressure Control Service

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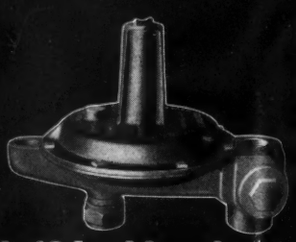

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Today's pioneering and development work must, of obvious necessity, be largely devoted to products for the war effort. However, as progress is made in these lines, it becomes apparent that many of the emergency dictated findings will contribute to the progress of the industry we serve after the war is won. We look ahead, confident that the output of plants like ours will sooner or later overwhelm the Axis and contribute many gains for peacetime application.

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GAS

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Eighteenth Year of Publication

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GUEST EDITORIAL

The Real Test Is Yet To Come

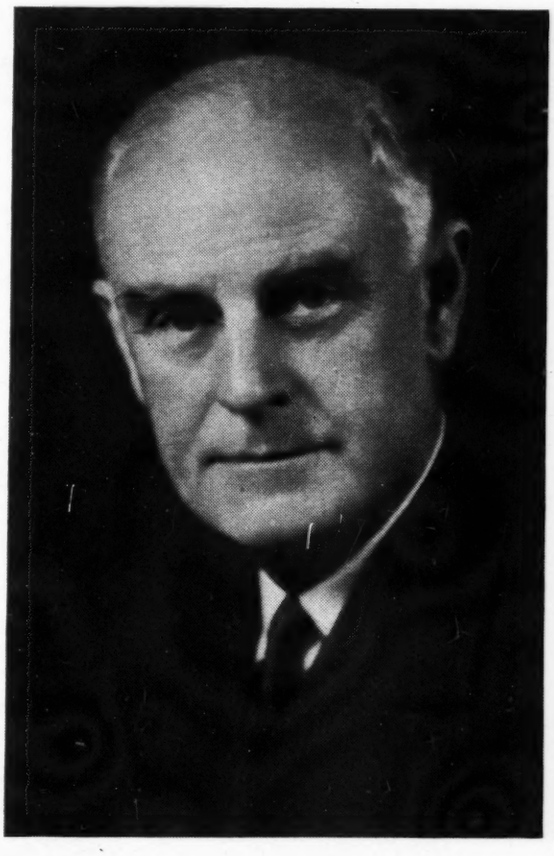
By GEORGE S. HAWLEY
President, American Gas Association

IN COMMON with other American business enterprises, the gas industry stands at the threshold of another winter of war—in fact, the first full winter of this war to be faced by our country. What we do as individuals, as an industry, and as a nation, in the vital months that lie immediately ahead may well determine the final outcome of this war and our future way of life.

So far the gas industry has set up a war record for which it may claim justifiable pride. However, it is going to be far more difficult to maintain this record as our country gets more and more into the thick of the fight. The actual testing of the gas industry under the severest of war conditions has yet to occur. What has transpired so far has been but a rehearsal for the real thing which is sure to come. Many think that will be this winter.

As this is written I hear of plans for a mass U. S. Army which will call up for service one out of every three men in the 18 to 45 age group. Drafting of 18 to 19 year olds is certain. Nation-wide gasoline rationing, meatless days, and strict rationing of many essential food products are scheduled for the early winter.

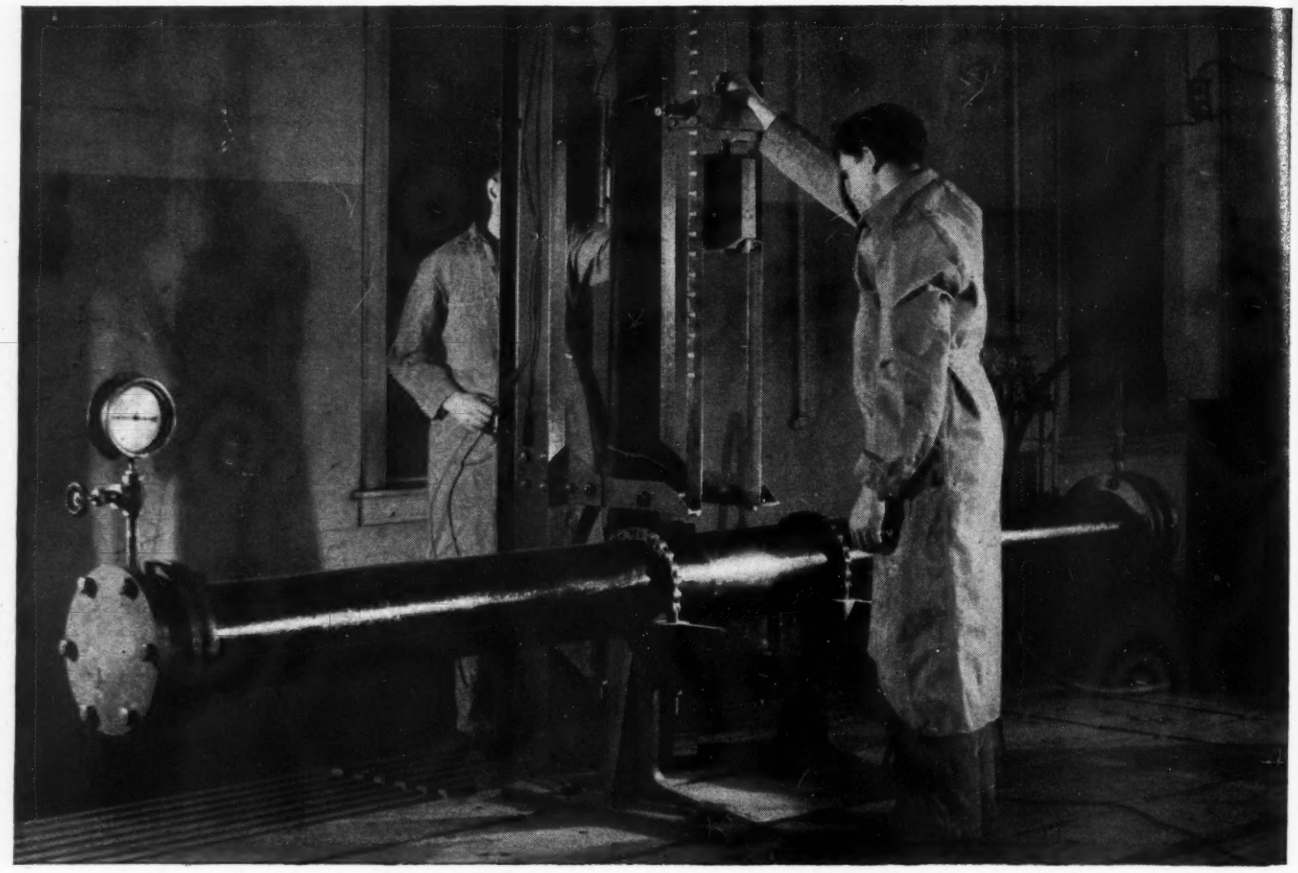
I am informed by those in authority that almost every civilian activity will undergo further drastic curtailment, that man-power problems in industry will become acute in the months ahead, and that the measure of an industry's ability to survive the crisis will be determined by its capacity to contribute effectively to the successful prosecution of the war.



George Hawley has long been an active leader in the gas industry and since 1928 has been president of the Bridgeport (Conn.) Gas Light Co. His wide experience in this field has netted him presidential positions in the Connecticut Gas Association, the Society of Gas Lighting, the New England Gas Association and the Guild of Gas Managers of New England. Mr. Hawley's special legal and business training, together with his natural executive ability, has made him a highly competent leader of the American Gas Association.

I have every confidence that the gas industry has "what it takes" to survive this war, and that it will win for itself a new and well-deserved public appreciation for the contributions it will have made to the conflict.

Let us, above all else, have faith in ourselves, our jobs and the future of our business, and let us also prepare for the greater sacrifices that surely lie ahead. By so doing we will make a valuable contribution to the war effort and at the same time advance the best traditions of our industry.



* This illustration shows the "Impact Test" to determine the toughness and ductility of the pipe. While under hydrostatic pressure the pipe is subjected to heavy blows from a 50-pound hammer dropped from successively increased heights. Although not a required acceptance test, it is one of the additional tests regularly made by this Company to further check and maintain the quality of its pipe so that it will adequately meet severe service requirements. *United States Pipe and Foundry Co., General Offices: Burlington, New Jersey.* Sales Offices in Principal Cities.

* One of a series of controls in operation at each of our plants, beginning with inspection and analysis of raw materials and ending with tests of the finished product, all subject to the central control of our headquarters staff at Burlington.

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THERMALLY THINKING

By ELLIOTT TAYLOR

Washington Editor

For Fuel Administrator

THE current concern of the WPB over a possible gas shortage, and the gas conservation publicity campaign in which the industry is expected to participate, gives rise to a question of the desirability and possibly the necessity of a complete reassignment of jurisdiction over all fuels under the control of war agencies in Washington. Oil rationing in the eastern states is destined to have immediate and troublesome repercussions on the gas companies in the rationed areas. In certain sections of the country natural gas is available in abundant supply, while in others strict conservation measures may be necessary to insure the equitable distribution of the supply available.

For industrial uses the question often arises not only of the ideal fuel for a job to be done, but of the one most immediately available in point of proximity to supply and facility of transportation. The atmosphere has been remarkably free in recent months of partisan bickering over the relative merits of competing fuels. But the fact remains that no decision on what fuel is to be used, or in what quantities, or where, can be intelligently made unless it takes into consideration the supply and availability of every type of fuel everywhere in the country.

In a sense all fuels are under the broad umbrella of the War Production Board, but the intimate working knowledge of the affairs of the several fuel industries are scattered over too many agencies for effective coordination of their vital war contribution. There is only one agency in Washington where all of the facts concerning all of the major fuels are immediately available, and that is in the Office of the Petroleum Coordinator for War.

It is safe to say that neither the Power Branch of WPB nor the Plumbing and Heating Branch, which for no good reason has jurisdiction over liquefied petroleum gas, would be competent to pass on any major fuel question without the advice of the OPC. And yet the OPC has no administrative authority of its own except that which is delegated to it in specific cases by the WPB.

We believe that in the interest of the most effective utilization of all our natural resources and reserves the administrative authority over all fuels, natural gas, manufactured gas, liquefied petroleum gas, oil, coal and even wood should be transferred to the existing coordinator's office, broadened to include all fuels, and that the present Petroleum Coordinator, as a newly created Administrator of Fuels, should be made a member of the WPB.

■ ■

The Month

WPB's amended order P-46 which became effective the second week in October cuts down by approximately 40% the amount of critical materials, chiefly copper and steel, that public utilities may use for the maintenance and repair of transmission and distribution systems during the last quarter of 1942. A new angle to the order is the requirement, as far as gas and water companies are concerned, that these utilities must acquire at least 40% of their materials (excluding meters) from the inventories of other utilities. Under the order maintenance and repair materials ratings have been raised from A-2 to AA-5 with a rating of AA-5 for emergency repairs. Since the order contains no provisions compelling those companies with more than adequate inventories to sell to others who must fulfill the 40% requirements, the ultimate effect of the order as a leveler of unbalanced inventories in the industry remains problematical. The American Gas Association has maintained an Inventory Pool Service for gas utilities for some time. But whether it or any other central agency outside of the government will or can branch out to include all utilities is extremely doubtful. After trading back and forth between companies in their own immediate territories is exhausted, it would appear that the gas industry will be in a worse position respecting needed supply and maintenance materials than it is at present.

The manpower situation in the gas industry waits, as does the same problem in every industry on the straightening out of the draft tangle, which will probably be accomplished shortly after the November election is in the bag. A uniform policy, not dependent on the whims of the thousands of local draft boards will be laid down, and it is probable that semi-permanent deferments will supplant the present system of six months renewable deferments for essential workers in a large number of industries, one of which will be the gas utilities. The degree of indispensability of a worker, however, will be dependent on the specific job that he is skilled in, rather than the industry of which his company is a part. It is worth restating that the whole principle of draft deferments was designed to keep essential industries operating efficiently, and not to save personnel directors headaches. Old men, women and those with physical handicaps are going to find their way into gas industry ranks in increasing numbers. Now is the time to decide where they can be used to the best advantage.

• •

OPA has its eye on the regulation of public utility rates. Taking advantage of the studied ambiguity of the new anti-inflation law under which the President is not required to approve rate increases but is entitled to 30 days notice of any rate increase with opportunity for intervention before regulatory bodies by a designated Federal agency, the Price Administrator Leon Henderson has moved in on the Washington Gas Light Co. rate case. OPA has advised the Public Utilities Commission of the District of Columbia that in the rate increase granted the gas company there has been a violation of both the letter and the spirit of the new law; it asks that the PUC vacate its own order granting the increase. The chances of the gas utilities remaining outside of the orbit of Leon Henderson's ambition to make his OPA the bureau of economic dictatorship do not appear heartening. State and Federal commissions still retain jurisdiction over rates but OPA has the public ear, and it has the executive blessing, factors which lesser bodies will weigh well before running counter to its declared policy.

• •

The OPA is already promoting the Panhandle Eastern Pipe Line decision of the FPC as a model of the consideration of regulatory bodies when the question of increased taxes is injected into rate cases. The idea is that any taxes on utilities over the 1940 rates should not be considered as increased operating expenses for rate making purposes. From a practical standpoint

there is logic in the contention that inflationary price rises cannot be curbed if the practice of passing on all new taxes to the ultimate consumer is allowed. As between the gas user and the gas investor the weight of official sympathy and concern is entirely on the side of the former. If this reasoning prevails, however, it is to be assumed that where increased operating expenses at existing rates can be shown to imperil the continuance of adequate service, rate increases will be favorably considered, even by OPA.

■ ■

Consumer Conservation

THE gas industry now has another war job—to cooperate with the War Production Board which appealed Oct. 27 to consumers to economize in the use of both natural and manufactured gas in order to save critical materials, transportation, and to avert threatened gas shortages. Full cooperation has already been pledged by the American Gas Association through its Committees on War Activities and on Publicity and Advertising.

At a press conference Oct. 27 Herbert S. Marks, acting chief, WPB Power Branch, in discussing the release (WPB 2068) stated that the conservation program must for the time being be on a voluntary basis, since the Branch has not as yet devised a means of rationing gas. Mr. Marks added, however, that the Branch has not as yet given up on the rationing problem.

The three principal reasons for gas rationing are: (1) The heavy increase in the use of gas by war industries; (2) Lack of steel and other critical materials for increasing gas supply; (3) The fuel oil shortage and limitation on transportation facilities.

Since the control over the domestic gas supply is in the hands of the consumer, it is essential that every means be taken to effectively and continuously inform the user of the absolute need for conservation. This is not exactly a new problem to the industry, since many companies have for some time discussed this topic through advertising and publicity with their consumers. The newspaper reader, however, has many matters at hand, and it seems he must be told forcefully and often if he is to get the point.

Important provisions included in the conservation program are:

1. Refrain from using the range oven for space heating.

2. Make the house air-tight through insulation, storm sash, weather stripping and caulking.

3. Put heating system in top-notch condition.

4. Set thermostat at 65° during the day and lower at night. Shut off parts of the house not in use.

5. Economize in use of the range by using a low blue flame, cutting down on amount of water in which to cook vegetables, cooking more one-dish meals and keeping burners clean.

6. Economize in use of water heater by repairing leaky faucets, insulating pipes and tanks, not leaving hot water running while washing, not filling tubs for baths, and setting thermostats at a minimum (120-140).

7. Economize in the use of the refrigerator by not leaving the door open, not putting hot or warm dishes in refrigerator, and not crowding.

The American Gas Association in pledging full cooperation requests that local publicity in the form best suited to local conditions be based upon the WPB's campaign and on the points enumerated above. Clippings sent to the Association will be helpful in keeping the WPB informed.

■ ■

Who's Fighting What War?

OUT in the West—about as close to the Solomon Islands as it is possible to get and still remain within the safe confines of the United States—one of the large gas utility companies faced a problem — that of meeting the increased demands of its domestic and war industries customers during the coming winter. As a partial solution it was decided to build a 10,000,000 cu. ft. gas holder.

Time, men and materials were important. To be useful the holder had to be in service by winter. It took many men to build the holder, and there were the problems of the draft and of the labor demands of war industries. Materials were at a premium, and the officials of the WPB and the company executives worked hard and harmoniously to bring men and materials together on a definite production schedule.

But now it seems that time, men and materials are not so important. Winter?—it's only November. Manpower shortage?—the vaguest of rumors. That, we assume, is how some union officials must reason—for they have ruled that, in painting this holder (which is now going on), no spray guns may he used, but that many men must long and laboriously slush away at the holder's 900-ft. girth, its 250-ft. height—if it takes the duration.

■ ■

Industrial Salvage

The gas utilities are to be commended for the thorough manner in which they have cooperated in the collection of scrap (see page 19). In fact, most utilities have had salvage programs in continuous operation for many years, and the current effort is merely an intensification and extension of long established practice.

Broadly speaking, there are two kinds of scrap: (1) ordinary scrap produced in regular processes, which is usually automatically salvaged; (2) "dormant" scrap — materials, equipment, etc., that are no longer in use but which management has either lost track of or has come to regard as permanent fixtures. It is this second type of scrap in which the WPB Industrial Salvage Section is particularly interested.

Among gas utilities there have been notable examples of such "industrial salvage" (Southern California Gas Co. is scrapping a briquet plant which had been non-operative since 1927), and there will be many more.

■ ■

Waste Can Lose the War

THUS spoke Petroleum Coordinator for War Harold L. Ickes before the St. Louis Section of the American Institute of Mining and Metallurgical Engineers in St. Louis on Oct. 1. To cite an example of waste that is going on today, *GAS* quotes Mr. Ickes:

> "Thanks to the application of modern scientific methods, it has been possible, since 1937, to find more than 150 new oil fields in the fields of southern Illinois, and the adjoining areas of Indiana and Kentucky. Four of these are of large size and several others are of substantial importance.
>
> "Under an orderly, conservative development program, these fields might have been expected to produce at moderate and sustained rates over a period of many years. But there hasn't been an orderly, conservative development. There has not been an effective State conservation law in Illinois—and there still isn't. The result is that more than half of the reserves have already been produced—in only five years. Another result is that the eventual yield now will be very substantially below what it might have been if conservative practices had been followed. An oil supply that *could* and *should* have been a source of wealth, and, more importantly still, of national strength, for many years has been tragically exploited, and is now far on the road to exhaustion.
>
> "The waste of natural gas that accompanied this folly has, of course, been prodigious. It was produced so rapidly and exhausted so quickly that it was not economically feasible to build pipe lines to the fields so as to capture and market it. No one will ever know how much natural gas was wasted, because adequate records were not kept. But we know that, for the years 1939 to 1941, inclusive, the total of natural gas wasted exceeded the total amount consumed in the State during the same period. The value, to the consumer, of the gas gone with the wind during those three years was about $120,000,000. The harm that this procedure has caused can be appreciated now that industry in some sections of the country is threatened with a possible shutdown because of a shortage of natural gas!"

A threat that is real—too real—and which can only be thwarted by a virile and unified conservation effort—both now and in the future—on the part of the gas industry.

GAS at WAR

Washington Notes

Maintenance and Repair (P-46): Under this order amended Oct. 10 the amount of scarce metals that public utilities may use for maintenance and repair of transmission and distribution systems during the last quarter of 1942 is cut approximately 40%. A reduction of 40% has also been made in permissible inventories.

The amendment brings the WPB power branch's control of materials usage by utilities in line with program determinations recently recommended by the WPB requirements committee.

Gas and water utilities must get at least 40% of their pipe and other similar supplies from the inventories of other gas and water utilities.

All ratings assigned by the order for materials required for maintenance and repair have been raised from A-2 to AA-5, with a rating of AA-2 for emergency repairs.

The amended order contains a specific definition of what is meant by the inventory of a utility, making it clear that it does not include material which a utility obtained under a project rating for the construction of a specific war project (such as a new transmission line). Of course, any material left after the completion of the war project goes into the inventory of the utility and becomes subject to control under the order.

The order has been amended to permit electric and gas companies to make a gas or electric connection for the operation of a range in the case of a person who moves into a house which was not wired or piped for range service prior to July 1, 1942, and which is not equipped with a range of any kind. In the case of electric utilities, not more than 15 lbs. of copper may be used for the connection.

Natural Gas (L-31): According to word that is going around, a new L-31 is in the making, may be issued this month. It is expected that the new order will be patterned after L-174 which restricted the deliveries of manufactured gas to new industrial and residential consumers after Sept. 1. The new L-31 is expected to be less stringent in its restrictions on replacements, more liberal in its interpretation of the definition of a "war industry," and generally clearer in its wording.

This more liberal interpretation of the L-31 order was indicated when the WPB lifted the ban on the use of natural gas in new domestic dwellings in a major portion of the northern California territory served by the Pacific Gas & Electric Co. Immediate effect will be that some 10,000 homes and housing units which have gas heaters installed but not connected will be allowed to use gas rather than convert to other fuels. This order applied only to domestic dwellings.

Unit Heaters (L-173): Amendment No. 1 removes production limitations on gas and oil unit heaters. Ability of these units to economically and efficiently heat war plants influenced the decision.

Carbon Black (M-244): A complete allocation system for furnace-type carbon black, effective Nov. 1, has been established by the director general for operations in General Preference Order M-244. This material is the most important pigment used in compounding synthetic rubber.

Persons seeking authorization to accept delivery are required to file Form PD-600, while those seeking authorization to make delivery are required to file Form PD-601.

Commercial Cooking Equipment (L-182): Non-electric cooking equipment used in restaurants, hotels, cafeterias, etc., was put under strict production and distribution control Oct. 1 by the War Production Board.

Manufacturers of some types of equipment must cut their use of iron and steel by 75%, based on 1941 production, for both new equipment and repair parts.

The provision does not apply to government orders.

Production of other specified types of such equipment is completely prohibited.

Sale of cooking equipment — both new and used — to restaurants, cafeterias, cafes and similar establishments is prohibited except with specific authorization of the director general for operations. It was pointed out that authorizations will be granted only in the most essential cases. The authorization must be applied for on Form PD-638-A.

The order (L-182) restricts use of iron and steel in such items as bakers, broilers, fryers, griddles, grills, hot plates, ovens (except built-in types), ranges, roasters, steamers, toasters, urns and warmers. Only equipment operated by coal, wood, oil, gas or other non-electric fuel is covered. Household cooking appliances are not affected.

Production and delivery of electrically operated cooking equipment has been restricted by previous WPB orders.

One section of the order allows ultimate consumers of cooking equipment to resell it to dealers, distributors or manufacturers without restriction.

Manufacturers, distributors and dealers must file reports of inventories with the WPB on the tenth of each month on Form PD-638.

WPB Commercial Cooking Group Organized: The War Production Board has organized the Plumbing and Heating Commercial Cooking Equipment Industry Advisory Committee. This committee is working with the Plumbing and Heating Branch of WPB.

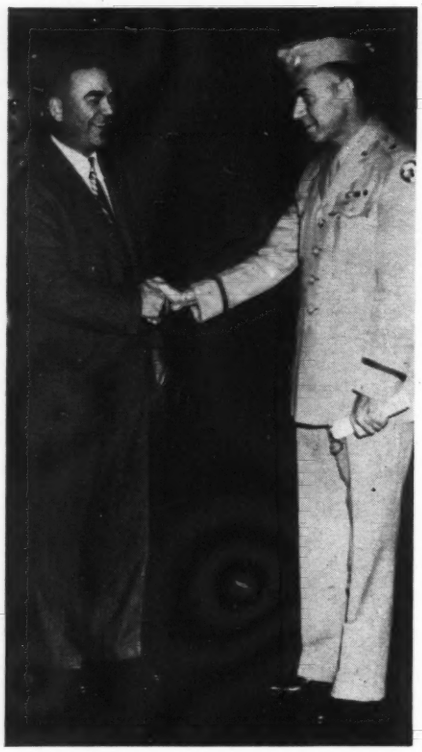
The function of this committee is to advise in connection with the new WPB order on commercial cooking, baking and warming equipment other than that heated with electricity. The new order is expected to simplify procedure in manufacturing and distributing food service equipment and at the same time still further save critical metals.

W. H. Frick, E. J. Shermire and W. Frank Roberts are members of the A. G. A. Food Service Equipment Committee; these represent American Stove Co., Detroit-Michigan Stove Co., and Standard Gas Equipment Corp., respectively.

Gas Cylinders (M-233): Control over production and distribution of gas cylinders was ordered Sept. 30 by the War Production Board with issuance of General Preference Order M-233. The order provides that until Jan. 1, 1943, production and delivery of the cylinders and cylinder forgings will be subject to such directions as may be issued by the director general for operations.

After Jan. 1, production and delivery of the cylinders will be permitted only as specifically directed by WPB.

Gas cylinders are now used almost entirely by the armed forces.



General Minton of the United States Army congratulates John A. Robertshaw, president, Robertshaw Thermostat Co., Youngwood, Pa., upon securing Army-Navy "E" Award. Presentation of the flag was made on Saturday, Sept. 12, in the presence of many distinguished officials of the Army, Navy, State and Federal governments. Individual lapel pins, symbolizing production leadership, were presented to each employee. High praise was given to the Robertshaw organization by Under Secretary of War Patterson in notifying the company of the award. The achievements which merited the company the "E" award include a 95% conversion of the plant to war production, the erection of new buildings, and even the conversion of the sales force into war production craftsmen.

Commercial Trucks

Copies of the booklets of instructions which are being sent to commercial motor vehicle operators to aid them in filing applications for certificates of war necessity under General Order ODT No. 21 are now available. One set of instructions is for operators of one or two self-powered vehicles, the other for fleet operators.

The booklets are for reference and contain a text of General Order ODT No. 21, a summary of other ODT orders applicable to the program and a reproduction of the application blanks to be filled out by operators, with examples of information to be submitted.

The new program is being administered by the ODT's Division of Motor Transport of which John L. Rogers is director, and carriers should direct all questions to Mr. Rogers, Interstate Commerce Bldg., Washington, D. C.

Tire Inventories: Applications for certificates of war necessity under General Order ODT No. 21 will provide the Office of Defense Transportation with a complete inventory of all tires now on the wheels of the country's more than 5,000,000 non-military commercial vehicles or held for the use of such vehicles.

In applying for a certificate of war necessity, every operator must report the number and condition of all tires in his possession by sizes or size groups, including both new and used tires.

In addition, the operator must list the mileage of tires, by sizes, which were removed from service, in 1941, exclusive of retreaded or recapped tires, thus giving the ODT a definite gauge on normal consumption of new tires by commercial vehicles.

■ ■

Winter Heating Problems

J. Y. Wheeler, vice president and division superintendent of the Texas Cities Gas Co. in El Paso has taken the initiative in regard to winter servicing problems. He has sent out a letter to the company's several thousand space heating customers stating that company service men will inspect and light furnace equipment in advance of the "first cold spell." This, explains the letter, "will insure you against possibility of delay, which will be inevitable this year, if you wait until cold weather to call on us for service."

The letter further states that no furnace equipment will be turned off prior to May 15, 1943—this because of the tire situation and the shortage of skilled service personnel.

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Utility Rates

The Emergency Price Control Act of 1942 as passed by Congress and signed by the President Oct. 2 contains the Norris Amendment as phrased by the Conference Committee as follows:

> "Provided, that no common carrier or other public utility shall make any general increase in its rates or charges which were in effect on Sept. 15, 1942, unless it first gives 30 days notice to the President, or such agencies as he may designate and consents to the timely intervention of such agency before the Federal, State or municipal authority having jurisdiction to consider such increase."

■ ■

Bombs Fail in England

Despite air raids in England, gas service has been continuous. Even in Coventry where the gas works was hit four times during the bombing of this city, the gas service was maintained. In some cases service was restored by laying pipes on top of the ground a short time after the all-clear signal was sounded.

Oil Well Beacons

The possibility of an oil well which had been fired either by sabotage or by accident serving as a beacon for enemy bombers was one of the problems considered recently by 100 representatives of the oil industry in Louisiana when they met in New Orleans with the state department of conservation to discuss ways and means to curb waste of gas in oil production. H. W. Bell, director of minerals division, told the meeting that while open flares had been blacked out in immediate coastal regions, there was potential danger from all wells not protected by chokers. Of 2542 wells in southern Louisiana, he declared, only 362 had installed chokers.

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Employee Identification

For the purpose of systematically and conveniently identifying Dallas Gas Co. employees for executives of the company, a photograph album containing group pictures of the entire personnel by departments, has been furnished each company official.

Twenty-nine group pictures, taken by Paul Cravens, advertising department staff photographer, are contained in the albums and each person in the groups has an identifying number.

■ ■

Food Protection in Air Raids

The domestic refrigerator is considered adequate protection for perishable foods against contamination from the effects of poison gas, if the door forms a reasonably airtight seal, according to a release from the Office of Civilian Defense. If there is any doubt about the safety of the refrigerator, closed containers may be used in it.

As a part of Phillips' silver jubilee celebration, 750 "planned parcels" were shipped to the employees of the Phillips Petroleum Co., Bartlesville, Okla., now in in the services.

The Gas Companies Get in the Scrap

"WE are faced with a serious shortage of steel, scrap, rubber and other vital materials. That shortage must be filled."

Those were the challenging words of Donald M. Nelson, chief of the War Production Board, when he instigated the scrap campaign, and if they had been specifically directed to the gas industry they could not have brought a better response from that industry.

Throughout the nation the men and women of the utility companies have responded to the call, "Get in the Scrap," and the result has been an enormous contribution to the scrap drive. The gas company employees, authorized by officials, have combed the plants for machinery and equipment, keeping in mind the rule, "If it hasn't been used for three months and you can't prove that it's going to be used in the next three months—then find a use for it, or scrap it."

Reports from the various gas companies reveal that many of them have had a regular practice of collecting scrap as a policy of "good housekeeping" and understandably can show no great contribution to the current drive.

Accounts to *GAS* from a number of the utility companies give very interesting insights into their efforts of "getting in the scrap."

Reporting for **Atlanta Gas Light Co.,** Atlanta, Ga., O. C. Waters, assistanta to president, says, "While the tonnage we have collected is not impressive, as we have always sold scrap promptly, we have gone over our properties carefully each month and have been able to collect some metal, rubber, etc., each time. Each property manager sells his scrap monthly and reports sales to this office. These reports show that we have sold the following since January:

629,372 lbs. iron
2,159 lbs. copper
1,327 lbs. brass
68 lbs. aluminum
500 lbs. paper
2,187 lbs. unclassified scrap

"An offer was made by the company to pick up all scrap that employees might have in their homes, the proceeds to be used to send cigarettes to men who had gone into the service from the company. Only 2000 lbs. were collected from 500 employees. This seeming failure actually indicated almost all of the employees had already cleared their homes of all available scrap materials."

Mr. Waters relates that as early as last June the Atlanta Gas Light Co. issued an appeal in the form of ten 30-in. ads stressing the importance of civilian conservation.

The scrap collection activities of **The Hartford Gas Co.,** Hartford, Conn., are outlined by N. B. Bertolette, president. "The importance of procuring scrap metals so necessary to the war effort was recognized by The Hartford Gas Co. early this year, at which time a salvage committee was appointed under Chairman P. J. Tierney, purchasing agent and priorities supervisor. This committee consists of a salvage leader appointed from each of the various divisions of the company to aid in determining what materials and metals might be scrapped and to aid in the collection of it.

"The results were quite heartening, as up to date our company has disposed of 112 tons of scrap metals which came from our production plant, street division, service building and main office. The largest item was cast iron scrap recovered from the dismantling of a very old gas holder which contained 65 tons of No. 1 grade cast iron which made up the holder columns. Included in this recovery was 46 tons of steel plate and castings, 225 lbs. rubber and 1000 lbs. of copper and brass.

"We are now dismantling some old cast iron purifiers from which we will obtain 120 tons of cast iron and 30 tons of steel.

"Another drive is now under way making a thorough check-up of possible scrap metals in our service building and we are disposing of five additional tons of steel and cast iron.

"By the end of the year we will have dismantled, collected and disposed of about 400 tons of all classes of scrap metals, so greatly needed by our war industries."

C. F. Martin, purchasing agent of **Northern Natural Gas Co.,** Omaha, Neb., says there has been nothing spectacular about his company's program, but during the early part of this year when the chief of the Industrial Salvage Section asked the gas industry to dispose of their scrap the Northern Natural Gas Co. immediately got busy doing so.

Since February they have disposed of 189 tons of scrap iron and steel, 1582 lbs. of brass and 70 lbs. of lead.

D. P. Hartson, vice president and general manager of **Equitable Gas Co.,** Pittsburgh, Pa., in responding to *GAS's* request for scrap information says, "Several years ago we discovered that we had a lot of obsolete equipment and materials on hand which called for a general clean-up and revision of our inventory. Since that clean-up we have followed a plan of collecting and removing scrap for sale. With the present critical situation we have intensified this activity. This program has resulted in the collection and sale of approximately 810 tons of scrap between Jan. 1 and Sept. 30, 1942. In addition we are at present dismantling and selling a station and plant which has not been in use since 1927, and expect to recover from this operation approximately 2500 tons of scrap metals."

Kenneth Fellows, advertising manager of the **Houston Natural Gas Corp.,** Houston, Texas, has prepared the following short article on his company's scrap activities.

"One of the major contributions of the Houston Natural Gas Corp. to the national scrap effort was made possible entirely by accident during the week when the city of Houston was officially conducting its municipal drive.

A company main line crew was laying 4-in. pipe line preparatory to serving the new San Felipe Courts emergency housing project in Houston with its 564 dwelling units. In laying the pipe it was necessary to cross what years before had been an

Your Old Hot Water Bottle
can help make a
BOMB SIGHT!
Salvage for VICTORY
2 old discarded rubber hot water bottles can furnish enough rubber for the rubber fittings in a Bomb Sight
Those bull's-eye bomb hits don't just happen! Our skilled Airmen plus the most valued weapon of our Flying Forces—the BOMB SIGHT—make them possible. Your old hot water bottle, with a second one turned in by somebody else can furnish the rubber for the rubber fittings in a bomb sight. Salvage yours now—send it along to help blast the Axis.
WHAT TO DO WITH WHAT YOU SAVE
Call Waste Conservation Headquarters, Wa. 2035, when you accumulate a sizable collection, or take small items to your junk dealer, or turn over to a charity organization.
NOTE: Through June 30 turn over to your nearest filling station the rubber you salvage.
Gas is vital in speeding war production—and your usual gas service is subject to wartime regulations. But your Gas Company is guarding its resources and materials, to insure a continuance of faithful service to its customers who depend on Gas for essential uses.
Do not discard anything that is still being used or which might have to be replaced.
ATLANTA GAS LIGHT COMPANY

The Atlanta Gas Light Co. was the first company in Atlanta to run a series of advertisements on the salvage campaign.

This window display of the Cincinnati company tells the public how it has been getting in the scrap for many years. The company believes in publicity — displays, news stories, bill enclosures—and in addition to company campaigns is cooperating in every way possible with the government in the scrap drive.

old city dump, and in the process of ditch digging a buried treasure of several large, heavy cast metal truck wheels with solid rubber tires was unearthed. The rubber was still live and the metal sufficiently heavy to add many hundred pounds to the scrap drive.

One of the largest individual contributions was made by Vice President E. S. George, who purchased an attractive suburban home two months ago with a surrounding five-acre tract of land. In giving the lot a thorough going-over, Mr. George gathered up more than 400 lbs. of old metal.

For months the Houston Natural company trucks have, upon notification, been picking up scrap metal at the homes of employes and delivering it to the junk yards."

L. W. Childress, president, **The Laclede Gas Light Co.,** St. Louis, Mo., tells *GAS* that it has been the policy of his company at all times to periodically arrange for careful accumulation and disposition of scrap and consequently, the current scrap campaign will not develop anything spectacular inside his organization.

The Pacific Gas and Electric Corp., San Francisco, Calif., has, like many other firms, been carrying on an individual scrap campaign for some months which has practically denuded their territory of scrap, according to R. S. Fuller, engineer in charge of gas construction and operation.

"We started our scrap drive with an employee campaign," says Lester J. Eck, vice president **Minneapolis Gas Light Co.,** Minneapolis, Minn. "Scrap collection locations with posters were designated where employees could dispose of scrap carried from home.

"To get out company scrap, a group made up of department superintendents and the general superintendent spent a day making an inspection of all Minneapolis Gas Light Co. property. Each piece to be scrapped was marked with white paint. Many obsolete fittings, pieces of odd size pipe, old pumps, discarded construction equipment, etc., went to make up a large tonnage of scrap which was collected by local scrap dealers.

"In a recent city wide scrap drive, Minneapolis Gas Light furnished 25 trucks to aid in collection and over 100 employees volunteered their services to aid the one day campaign."

During the first nine months of 1942 the **Wisconsin Power and Light Co.,** Madison, Wis., sold the following scrap owned by the company: ferrous metals, 445,348 lbs.; non-ferrous metals, 132,149 lbs.; rubber, 7580 lbs.; paper, 40,964 lbs.; distribution transformers, 1000 K.V.A.; electric meters, 1324; inst. transformers, 893 lbs.; storage batteries, 1232 lbs.; gas meters 76 lbs.

A. P. Gale, executive vice president of Wisconsin Power and Light states that his company has just completed a check of all material and equipment which has been held for future use and has decided that most of this equipment will be sold as scrap.

Field representatives of the Wisconsin Power and Light assisted the special project salvage section of WPB last April in locating scrap steel to the amount of 3000 tons.

The Cincinnati Gas & Electric Co., Cincinnati, Ohio, has gone all-out in its efforts to collect scrap and encourage its customers to do likewise. Company bills sent to customers had a printed message on the back urging all to save and give or sell scrap iron, metals, paper, rubber and rags.

In writing of his company's program H. C. Blackwell, president, The Cincinnati Gas & Electric Co., says, "We have an independent committee which has for its principal duty the finding of scrap which may exist about our properties and seeing that it gets to the market as promptly as possible. They also attempt to find machinery that is no longer of use and bring this to the attention of those in authority so that it might be disposed of, if it can be spared. Our companies have delivered into the scrap channels about 3,400,000 pounds of scrap of all kinds so far this year."

The "Scrap for Scrap" drive sponsored by The **Brooklyn Union Gas Co.,** Brooklyn, N. Y., exceeded all expectations when employees contributed more than 254,000 pounds of rubber, copper, aluminum, tin and other metals, or an average of 60 pounds per employee—six times the goal stated at the outset of the drive!

Reporting his company's activities to *GAS*, W. B. Hewson, manager of publicity and advertising, says, "In organizing the movement we used our Employee Sales Plan staff, a group already well equipped to work out the practical aspects of such a drive. This group in normal times is used for sales work. All money received from the sale of scrap was turned over to the American Red Cross and the Salvation Army."

G. W. Horsley, general superintendent, **The East Ohio Gas Co.,** Cleveland, Ohio, has supplied *GAS* with the following resume of the steps taken by his company to "get in the scrap."

"The main warehouse of our Cleveland plant is located in an old artificial plant. In looking over this plant we found that we had three 9-ft. water gas generator sets which were no longer in use. Salvage men were called in and as a result, 229 tons of metal were sent on their way. After the removal of the gas machinery, our purifier boxes were no longer needed. There were two sets of these boxes—one set yielded 215 tons of scrap, and the other, 157 tons. At another of our plants where practically everything

had been abandoned and dismantled we found that there were several large cast iron lines underground. We consulted salvage men as to the possibility of salvaging this pipe and sent another 118 tons of scrap metal to the scrap pile. At this time we are making arrangements to scrap a 500,000 cu. ft. holder which is 100 ft. in diameter and will net approximately 300 more tons of scrap.

"A systematic program of reclaiming tools, fittings, pipe, and other materials used in the industry was intensified. In this manner we are helping to conserve scarce materials rather than ask the manufacturer to supply us with new materials.

"Various types of scrap materials gathered in the Cleveland area and sold monthly since the first of this year are shown in the following tabulation:

Cleveland Area Only.

Miscellaneous scrap iron	518.15 tons
Non-ferrous metals—brass, lead, zinc, etc.	16.45 tons
Rubber—Junk tire casings, tubes, etc.	5.54 tons
Rope	1.01 tons
Rags	183 lbs.
Waste paper	40.26 tons

Similar programs were carried out in other divisions outside Cleveland, resulting in the salvaging of several hundreds of tons of additional scrap materials.

Scrap materials sold by all divisions of the East Ohio Gas Co. since January 1 include:

Ferrous	1141.60 long tons
Brass, bronze and copper	11.20 long tons
Lead	7.10 long tons
Paper	53.95 long tons
Rubber	4.88 long tons
Rags	.88 long tons
Tin meters, rope, etc.	27.52long tons

Executive Vice President H. L. Masser of the **Southern California Gas Co.,** Los Angeles, Calif., has reported that his company has disposed of over 500 tons of scrap during the past 12 months. This contribution to the national scrap pile includes 245 tons of No. 1 heavy melting scrap, 95 tons of cast iron scrap and 173 tons of unprepared scrap. The company's largest contribution in any one month was made in September when 109 tons were turned over to war industries.

Joseph Bower, president, **Oklahoma Natural Gas Co.,** Tulsa, Okla., in the report of his company's cooperation in the national scrap drive says, "The Oklahoma Natural Gas Co. has always made every effort possible to scrap all tools, material and equipment which have no present or future use or worth in the company's operation. Ultimately a committee was formed which is known as the material control committee, consisting of members from the purchasing, engineering and operating departments. The functions of this committee are to travel throughout the company's properties inspecting and adjusting warehouse inventories, tools and idle equipment. In performance of these functions during the past two years, or since the Lend-Lease bill, the committee has scrapped and sold some 1250 tons of metal.

"During the National Scrap Campaign, each district manager was instructed to canvass his entire property discarding every piece of metal that could reasonably go to the scrap pile. Daily reports were made of scrap collected, and each manager at the completion of the campaign returned a map of his district showing every point on the company's system where scrap had been collected.

"During this campaign the repair stock was reduced to a minimum with an intent to get every piece of metal into the scrap pile that was not earmarked for use in the near future. Included in our scrap pile were many items which were either obsolete or damaged and which may have had some usefulness at an undetermined date in the future. Of note among these items were two slightly damaged cylinders from a 1912 model Snow compressor unit which have been in storage for the past 20 years. Each of these cylinders weighed six tons.

"The total amount of metal collected for the National Scrap Campaign by the Oklahoma Natural Gas Co. amounts to 475 tons."

An interesting report comes from Dorothea Schlesinger, of the advertising department of **New Orleans Public Service, Inc.,** New Orleans, La., in which she tells of the timely and worth-while project on conservation carried out by her company.

Miss Schlesinger says, in part:

"A sound-slide film entitled "Our Part in America's War on Waste" was produced and shown to all employees as part of our employee information program. Members of the company met in small groups under the direction of a conference leader to view the film and to discuss its application to their particular line of work.

"Supplementing the film, a booklet containing the same pictures and script was distributed to all members of the company after the film had been shown in order to get the same story across in both visual and printed form. In addition to the pictures and script from the film, the end of the booklet lists some outstanding ways in which employees can help eliminate waste and conserve materials.

The purpose of the film is twofold; to let employees know what the company is doing in salvage and reclamation operations; and to impress on every employee the necessity of his conserving existing materials and equipment and doing the best he can with the limited amount of additional supplies and materials we will be able to obtain.

"The point is emphasized that, although an essential industry, our company is restricted in the amount of new equipment it can get, since priority ratings granted are not high enough to secure many scarce materials ordinarily used. Consequently, all members of the company have an especially important responsibility; since the services the company renders are essential to the war production program, and therefore must be maintained. The film thus places the issue squarely before our employees that it is their patriotic duty to conserve, to prevent waste, and to salvage and reclaim materials and equipment for further use wherever possible."

Norbert O. Fratt, assistant general manager, **Seattle Gas Co.,** Seattle, Wash., reports the creditable scrap drive work done by his firm in the following resume:

"We have turned in 43.095 lbs. of iron and steel, 1182 lbs. of rubber, 50 lbs. of brass plus various miscellaneous items. One of the interesting things that happened was that when we were making a search of the property for various odds and ends that could be turned in, we discovered we had two German built "Junkers and Ruh" gas ranges that we had been saving as curio pieces. Naturally enough, we decided to send them back to Germany. We placed them on the sidewalk in front of our store along with the rest of the miscellaneous scrap which we cleaned out of the building. They created a great deal of comment during the few hours they sojourned there before they started their final trip back to Germany."

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Free Offer of Fuel Films

Four motion pictures on subjects relating to the government's fuel oil rationing and conservation programs and produced under the direction of the Department of the Interior's Bureau of Mines and the U. S. Bituminous Coal Consumers Council, are now available, free of charge, to schools, industries, defense organizations, consumer committees and other groups.

Three of the films, "Heat and Its Control," "The Story of Rock Wool Home Insulation" and "The Story of Petroleum," produced by the Bureau of Mines, can be obtained in 16-mm. size in both sound and silent versions from The Bureau of Mines Experiment Station, 4800 Forbes St., Pittsburgh, Pa. The fourth film, "Coal for Victory," is also available in 16-mm. size in sound version only from The U. S. Bituminous Coal Consumers' Council, Box 483, Washington, D. C.

THE COUNTRY'S NATURAL GAS RESOURCES

By RALPH E. DAVIS

Petroleum and Natural Gas Engineer, Pittsburgh, Pennsylvania

THIS study will present a picture of the known natural gas reserves of the United States and make a statement regarding the potential gas reserves. Although I have had a broad opportunity to become familiar with the natural gas fields in this country, the quantity of gas recognized as proven in each field changes from day to day, and no man, or in fact no group of men, can possibly do better than approximate the broad picture that this study draws.

When one studies the gas reserves of a given field or of a given region, it frequently becomes apparent to him that the total reserve may be great, measured in units of cubic feet or in units of year's supply, but that a closely related question is often of very great importance, that is, the question of capacity to produce during a given interval of time. Inasmuch as the question of production capacity is becoming so very important in certain fields and regions, I propose to discuss not merely the question of known reserves and prospective reserves, but also the question of availability of the gas, for unless these two matters are considered together it is quite possible that erroneous conclusions may be reached.

At the outset I think it well to look at the history of natural gas production in the United States. From a practical standpoint, important production began, I believe, about 1885, although minor quantities of gas were produced even prior to the drilling of the Drake well in 1859. The natural gas industry grew up as an adjunct to the oil industry and, with notable exceptions, the discovery and development of gas has resulted from the search for oil.

According to the Bureau of Mines, the total production of natural gas in the United States, delivered to consumers in the period 1906 to 1940, inclusive, was 42,322 billion cu. ft. To this we may add at least 25% for gas lost or wasted. In 1906 the total marketed production is stated at approximately 389 billion cu. ft. In 1940 the total marketed production was approximately 2655 billion cu. ft. This includes gas used in the field, but does not include gas wasted, estimated by the Bureau of Mines at 656 billion cu. ft., or about 20% of the total. These figures do not include gas placed in storage or used in repressuring, as this gas should eventually be largely recoverable.

No record is available to me of the total gas produced prior to 1906, and inasmuch as great quantities of gas have been wasted, particularly in the early years of oil development, no one will ever know what the total past production of the nation has been. During recent years notable progress has been made in the conservation of natural gas, and for two reasons. The value of the gas and the fact that it is an irreplaceable wasting resource, also its importance in efficient oil production, have been more widely recognized.

From my studies I am satisfied that to the end of 1940 the total production has been well in excess of 60 trillion cu. ft., and if we bring the figure down to date, the total has been in excess of 65 trillion cu. ft. This figure is of importance to us when we are giving consideration to present reserves known and potential, for if we have some knowledge of the total past production of the country and of the extent to which proven reserves today exceed the proven reserves of any previous year we have in our hands a very crude yardstick to test the reasonableness of reserve estimates that may depend upon highly technical geological or engineering approaches.

Therefore, I can say that the known reserves today are greater than in any previous year.

This statement is based upon the fact that in every recent year substantial additions to the known natural gas reserves have been made and in amounts annually exceeding the total gas withdrawals. For example, within the last two or three years notable discoveries of large reservoirs filled with gas at high pressure have been found along what we call the Wilcox trend in a belt that crosses south-central Louisiana and south Texas, and exploration along this trend is in an early stage. Deep drilling along the Gulf Coastal Plain in both south Louisiana and in Texas has added enormously to known reserves within the past 5 to 10 years. In the region of the Sabine uplift proven reserves today are substantially greater than were known in 1930. No one familiar with this development will deny that known gas reserves of the nation have been climbing from year to year and at a substantial rate.

In order to give you a picture of the total known reserves I have divided the country into five districts: The Appalachian, the North-Central, the Mid-Continent-Gulf Coast, the Rocky Mountain and California.

Appalachian Area

The Appalachian gas fields are generally regarded as including the gas-producing areas in New York State, Pennsylvania, West Virginia, Ohio and Kentucky. From a geologist's standpoint it would be proper to include the gas-producing area of southern Ontario, as this is merely a northerly extension of the same general natural gas region.

The total production of the region, exclusive of Ontario, from 1906 to 1940 is given by the Bureau of Mines at 12,781 billion cu. ft. This figure includes all gas marketed of which there is a record but it does not include gas wasted. The total gas marketed in the year 1906 was 306 billion cu. ft. Inasmuch as the industry has been growing gradually from about 1885, it is reasonable to estimate the marketed production prior to 1906 at approximately 3000 billion cu. ft. These figures indicate that the total production to the end of 1940, exclusive of gas wastage, was of the order of 16 trillion cu. ft.

Gas of this region has been obtained from more than 30 separate producing horizons although it is exceptional when more than two or three producing zones are found to be productive in any one well. The total number of separate pools that have been discovered is of the order of 1500. The total marketed production in 1940 was 385 billion cu. ft. In 1941 production was probably slightly in excess of 400 billion cu. ft. Many of the pools have been wholly or largely depleted while a small number are still in the early stage of their productive history.

It would be an enormous undertaking to review the Appalachian territory well by well or lease by lease to arrive at a reserve estimate, but based upon recent studies of a substantial portion of the whole, and giving consideration to the productive history of this region and to its present productive capacity, and knowing that the region generally has been widely although not completely tested by the drill, it is my judgment that present proven reserves are of the order of 5 trillion cu. ft., and that potential reserves are of small

magnitude even though commercially they will be very important.

Fig. 1 reflects the production statistics in the Appalachian field for the period 1906 to 1940 in total and also by states. It will be noted that West Virginia has been the great reservoir for natural gas and that for some 25 years its production has been on the decline. The increase of the last five or six years has been due in part to increased markets for gas, and also in large part to notable discoveries of deeper gas in the Oriskany horizon. It is anticipated that production in West Virginia will shortly resume its downward trend.

The production in Pennsylvania, the second state in importance from the standpoint of gas supply, has been on a slow-down trend since prior to 1906. The dip in production for the years 1931, 1932 and 1933 was occasioned by lessened market requirements while the increase in more recent years has been partly due to the increase in demand for gas, as well as to notable local discoveries of deeper gas in the Oriskany in northwestern Pennsylvania. It is anticipated that production in Pennsylvania will continue to decline.

The production in Ohio has been fairly well maintained since 1915, the year of peak production, fluctuating more or less synchronously with market demand. New pools, minor in size but substantial in number, are being currently discovered in Ohio, and it is anticipated that this development will continue for a number of years although the overall production of the state is likely to continue a slow decline.

New York State has never been important in the production of natural gas except from the local standpoint. Deep Oriskany gas was found in southwestern New York some 10 to 12 years ago, resulting in a great increase percentage-wise in the natural gas production of the state. Unfortunately, the New York State Public Service Commission permitted these fields to be rapidly depleted by the burning of gas for inferior purposes such as boiler fuel. The fields have been largely depleted and the subsequent search for new sources of gas in the area has been both expensive and discouraging. A shortage of natural gas in southwestern New York is at hand.

The production of gas in Kentucky is important mainly in the eastern part of the state. This is the last area of important natural gas reservoirs of the Appalachian region to be brought into large scale production. It is anticipated that Kentucky output will, to an important degree and for some years, partially replace the waning supply from the several other gas-producing states of the region.

Since Pearl Harbor the effort to maintain productive capacity in the Appalachian region has been carried on at a feverish rate, except during the period of restricted drilling imposed by the War Production Board through the issuance of Order M-68. After some months of delay this order was modified and drilling is again very active. The gas deliveries in 1941 were greater than in 1940. The output in 1942 will doubtless equal the production in 1941 and it is hoped that deliveries in 1943 may be of a similar total, that is, in excess of 400 billion cu. ft. for the region. A supplemental supply will be available through the link-up of the main line of Panhandle Eastern Pipe Line Co. with lines in Ohio of the Columbia Gas System,* and additional lines are being projected from the south. Practically all of the industrial gas used in the Appalachian states today is in plants devoted to war purposes. Should the war last for more than another year or two it will in all probability bring about a critical situation in the natural gas supply of this important consuming region, similar to, although surely not as critical as, the situation which has already developed in southern Ontario. In this latter region it is physically impossible to supply the natural gas needs of the war industries that heretofore have been served and at the same time meet the domestic requirements of those who until this year have depended upon natural gas.

*Federal Power Commission Oct. 6 issued a certificate to Panhandle Eastern to build a 17-mile line to connect with Ohio Fuel Gas system.

MR. DAVIS' reputation as an analysist of the natural gas reserves in the United States has been established for many years. In 1935 he had occasion to estimate the country's reserves, placing them at that time at 62 trillion cu. ft. The results of a similar study made by Mr. Davis in 1938 were published in GAS (May, 1938, page 29), and the total figure had then increased to 66 trillion cu. ft. The present analysis is encouraging in that Mr. Davis finds the known reserves today to be greater than in any previous year—a proven total of 85 trillion cu. ft. There is no implication, however, that the natural gas reserves are limitless or that they can be used without the greatest of care and good judgment; in fact, Mr. Davis plainly states, "The importance of gas conservation is now so evident everyone can see it." This paper was presented before the autumn meeting of the Interstate Oil Compact Commission in Chicago, Oct. 1-3, 1942.

R. E. Davis

North-Central Area

The North-Central area, which includes Michigan, Indiana and Illinois, is a region in which natural gas production has been of substantial importance locally although from the broad standpoint of the nation's reserves the quantity now known is relatively minor. The total marketed production from 1906 to 1940 approximated 270 billion cu. ft. The marketed production in 1940 approximated 22 billion cu. ft., of which a little more than one-half came from Michigan. In Michigan the natural gas being marketed is mainly from reservoirs which do not produce oil, hence conservation is effective. The discovery of additional gas reserves of this type is continuing with important areas yet to be adequately explored.

Natural gas in Illinois is obtained almost entirely from formations that produce oil. Progress has been made in repressuring, and recently this procedure has been more widely applied. Oil field gas, largely wasted in the past few years, is thus being returned in increasing quantities to underground storage, and this will be an important factor in determining the ultimate availability of gas in the Illinois fields for pipe line use.

The presently proven reserves in Indiana are minor in amount as compared to the two neighboring states of Michigan and Illinois.

The known recoverable gas reserves of the three states are placed in this estimate at only 200 billion cu. ft., largely on account of the uncertainty of conservation becoming effective in Illinois. Prospective reserves are judged to be of similar amount.

Mid-Continent-Gulf Coast Region

The area referred to as the Mid-Continent-Gulf Coastal region is recognized as the great storehouse of presently known natural gas reserves. In it we include Texas, Louisiana, Arkansas, Oklahoma, Kansas and southeastern New Mexico. Other states bordering those named such as Mississippi, Missouri, Nebraska and southeastern Colorado might also properly be included, but the known gas reserves of these latter states are of no importance.

Eastern Kansas and northeastern Oklahoma have afforded substantial natural gas production for a very long period—for so long a time in fact that the known reserves are now largely depleted. Important reserves of the order of one trillion cu. ft. or more are known in southern and southwestern Oklahoma. There can be no doubt that additional substantial gas reserves will eventually be found in western and southwestern Oklahoma. Here the pro-

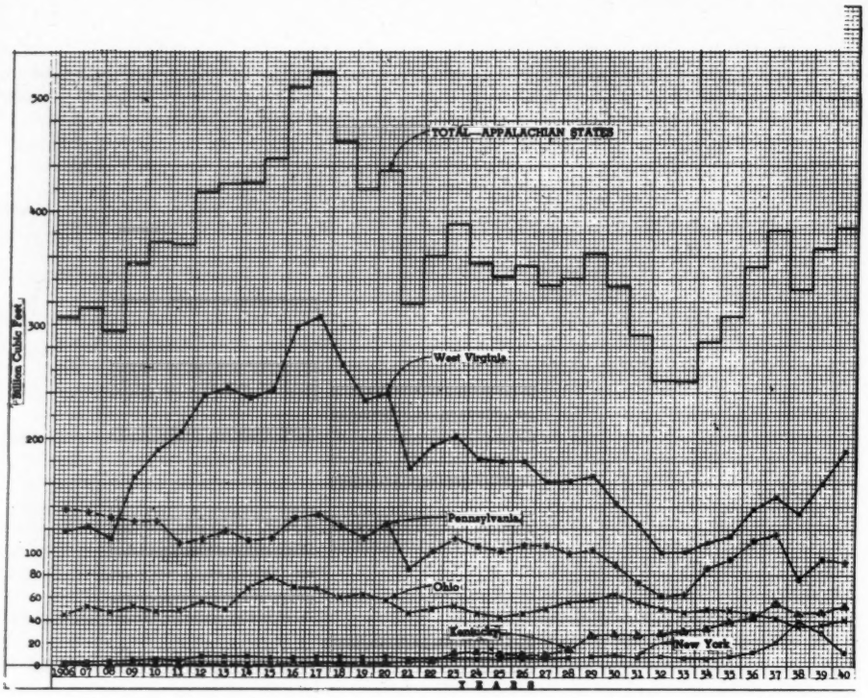

FIG. 1. Natural gas produced in the Appalachian States and delivered to consumers. (Based on U. S. Bureau of Mines figures.)

ducing formations lie at great depth, exploration will be expensive, and once the search for oil in the region proves to be satisfactory the ultimate discovery and development of the potential gas supplies of this region will doubtless involve a long time period. Oklahoma is producing gas not only for its substantial local markets which have been augmented for the period of the war, but it is also supplying gas for export southward into north Texas and northeasterly into Kansas and Missouri. Within the area usually referred to as the Mid-Continent oil and gas region, enormous reserves have been discovered and partially developed in the great Amarillo and Hugoton fields situated in the Texas Panhandle, in the Oklahoma Panhandle and in southwestern Kansas. In these two fields, proven reserves of more than 30 trillion cu. ft. are recognized. In north and central Texas scattered over a wide area and in many places associated with oil production, proven recoverable reserves of from two to three trillion cu. ft. are assured. In the Permian basin of west Texas and of southeastern New Mexico great proven reserves exist, probably of the order of four to five trillion cu. ft. The market demand for gas from this area has been so limited that careful overall studies of the region have not been made so far as I know. Nevertheless we are aware of the great extent of natural gas, much of it in producing formations that have been cased off in wells reaching deeper for oil.

In the region of the Sabine uplift, which includes northwestern Louisiana, southwestern Arkansas and adjoining portions of east Texas, many great oil and natural gas fields have been discovered and have been under production for a long time. Some of these fields have been largely depleted, particularly in the upper sands. Many of them are only modestly depleted and a few such as Logansport have been but recently discovered. The proven recoverable reserves of this region are of the order of three trillion cu. ft. Here the drilling continues active and it is safe to predict that additional substantial reserves will be found in deeper horizons within some of the presently known fields, as also in locations or areas not yet fully tested. The Monroe field of northeastern Louisiana might well be mentioned in connection with the fields of northwest Louisiana, on account of the manner in which this field is operated in conjunction with other neighboring fields in the supplying of great quantities of gas to many major pipe lines. The Monroe field has a remaining recoverable reserve estimated at approximately two trillion cu. ft., having produced in excess of three trillion cu. ft.

The Gulf Coastal Plain is the real storehouse of our natural gas reserves, both proven and potential. The presently known recoverable gas reserves of the Gulf Coastal region west of the Mississippi and north of the Rio Grande are, in my judgment, 25 trillion cu. ft. This estimate does not include several trillion cubic feet of gas dissolved in oil and currently making slight contribution to the used gas supply of the region. The potentialities in this region are very great. Many new fields have been found in every recent year and in spite of the fact that new oil reserves are becoming increasingly difficult to discover, there is no indication that we will have any early difficulty in adding to our known gas reserves whenever it may be worth while to do so. It is recognized that the deeper formations of the Gulf Coastal Plain are relatively rich in gas and condensate as compared to petroleum. We may expect the future to bring forth many additional producing areas and that deeper drilling in presently productive areas will, if the economics justify, discover new reserves of the order of at least the quantity now known.

Summarizing this third district, described as the Mid-Continent-Gulf Coastal region, we find it to contain presently proven recoverable reserves totaling approximately 70 trillion cu. ft. The potentialities of the region for additional gas not now actually known may, if you like, be anybody's guess. My guess is that with the passage of time natural gas will become more valuable and we will find it economic to withdraw gas from reservoirs such as Hugoton and Amarillo even when the productive capacity of wells has declined below that which today would be economic. These large reserves now recognized as proven but classed as non-recoverable may become recoverable. Such reserves are potentially recoverable just as are the known reserves of iron ore which because of their grade cannot be economically mined today, and the reserves of coal in seams of, let us say, less than 30-in. thickness which are not today mineable because thicker seams are available. If gas reserves of this category can be included as potential, then I would guess the ultimate potential reserves of the Mid-Continent-Gulf Coastal region to be of an order approaching the presently proven recoverable reserves.

There are doubtless many who will consider my estimate of reserves for the Mid-Continent-Gulf Coastal region to be on the high side. To them I will say that the marketed production from this region, 1906 to 1940, inclusive, is given by the Bureau of Mines at 22,902 billion cu. ft. There was marketed production prior to 1906 and there have been enormous amounts of gas wasted in such fields as Amarillo, Oklahoma City, Rodessa and many others. With wastage now under substantial control and with greater control expected for the future, it seems to me reasonable to expect a future marketable production of the order that I have suggested.

Rocky Mountain States

Natural gas is produced in several Rocky Mountain states, particularly in Montana and Wyoming. The known gas supply in these states is not great when compared to the Mid-Continent, but the supply is very substantial when measured in terms of market requirements. In Montana the Cut Bank, Baker-Glendive, Bowdoin, Kevin-Sunburst, Whitlash, Dry Creek, Bowes and Box Elder fields have known recoverable reserves approximating, in my judgment, at least 750 billion cu. ft. In Wyoming, Colorado and Utah known reserves of a somewhat similar order exist in a number of fields. Substantial additional reserves should eventually be discovered in this broad region by further development of known structures and discoveries in possible areas not yet explored.

California

California is first in the number of natural gas consumers among the states of the Union and is the only large producer of natural gas that does not export or import any of this natural product. Natural gas production in California in the past has been intimately associated with crude oil production. Dry gas started to assume importance with the utilization of the Rio Vista field gas in 1941. The fields of the Los Angeles basin, as also such fields as Ventura Avenue, Kettleman Hills and the Kern County fields, are extremely prolific from areas limited in areal extent but having producing sands of great thickness and fortunately superimposed one above another to very great depths. The production is mainly in the hands of the oil companies and gas production is so handled as to yield the ultimate greatest possible recovery of oil consistent with supplying the necessary natural gas markets. Inasmuch as the gas is principally carried in the upper portion of the oil-producing sands and in the form of gas caps, production is obtained along with the production of oil. Variation in the gas production is obtained by substituting high gas-oil ratio wells for low gas-oil ratio wells or by drawing gas from wells making no oil.

Total recoverable gas reserves are believed to be of the order of 9 to 10 trillion cu. ft. In recent years most of this gas has been utilized, about two-thirds by the gas companies and most of the remainder by the oil companies. I would, therefore, place the proven reserve available to the gas companies at around 6 to 7 trillion cu. ft., although this may be substantially affected by changing conditions due to the war, such as increased oil production, war emergency regulations, etc. An extensive repressuring program is being inaugurated which may keep the balance close to the present relationship. Additional prospective reserves should be found with deeper drilling in present fields, as also in any field to be discovered in the future.

A graphic presentation of the natural gas production and its utilization in California is shown in Fig. 2, as also the related crude oil production. This information was supplied through the courtesy of R. M. Bauer, gas supply supervisor, Southern California Gas Co., Los Angeles.

Summary

If the preceding statements and analyses of the natural gas reserve situation in the various districts of the United States be at this time a fairly correct picture, we may note that the total proven reserve is of the order of 85 trillion cu. ft. and that potential reserves, difficult at best to visualize quantitatively, may be of a similar quantitative order. Unfortunate for our economy as now developed, the proven and potential reserves are relatively small in certain regions where the demand for gas is great and exceedingly important. It is to be expected that this situation will within reasonable time and as the conditions permit be overcome in part at least by the installation of new transmission facilities so that gas may be taken from areas of super-abundance to areas strong in demand but short on supply. This development should, it seems to me, be for the greatest good of the greatest number, for not only will districts now short or approaching a shortage of gas have the supply replenished at reasonable cost, but the regions such as the Gulf Coastal Plain of Louisiana and Texas endowed with enormous reserves will find it possible to market a substantial portion of the gas output which, in part, to a very recent date and even to some extent right now, sees too much gas going into the air as waste. It is not my intention to discuss conservation, as that subject will be covered by other speakers, but before leaving the gas reserve study it may be pointed out that the duration of our supply of natural gas is dependent upon several factors such as known reserves, potential reserves, rate of withdrawal for useful purposes and wastage.

Fig. 3 shows that natural gas marketed in the United States has increased more than three-fold in the past 20 years. Unless everything goes haywire,

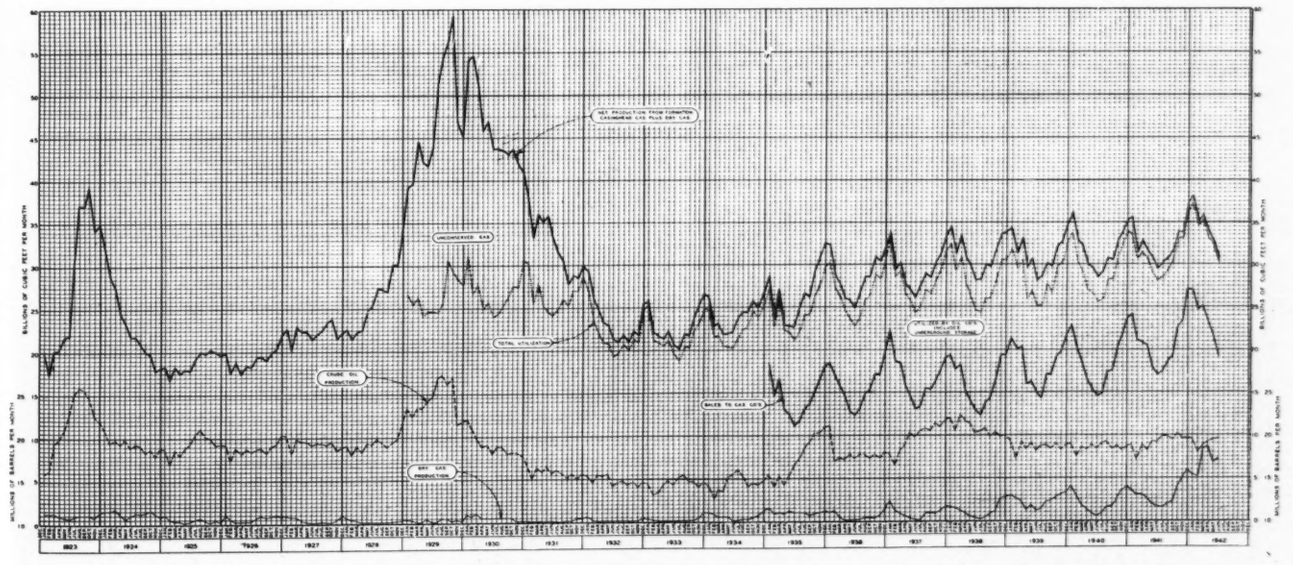

FIG. 2. Monthly crude oil production and natural gas production and utilization for the State of California (1923-1942).

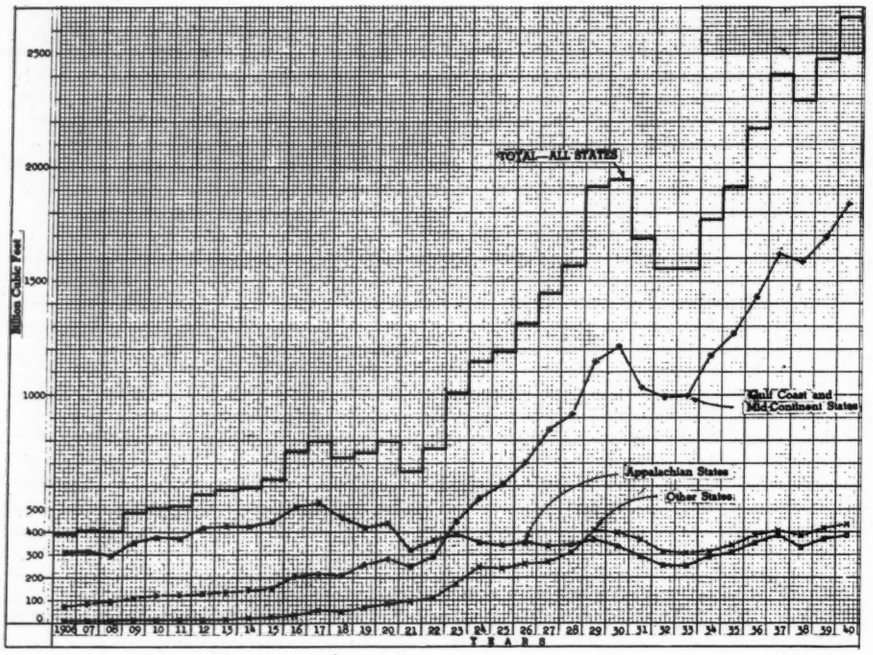

FIG. 3. Natural gas produced in the United States and delivered to consumers. (Based on U. S. Bureau of Mines figures.)

this trend in the increased use of gas should continue. The importance of gas conservation is now so evident everyone can see it.

In giving further thought to the matter of the longevity of supply we should note that gas lost and wasted amounting to 656 billion cu. ft. in 1940 is produced mainly from oil wells, and that in my estimate of recoverable reserves I have not included a great deal of the gas contributing to this stream of waste gas. Although the total withdrawal of gas from the ground in 1940 over and above that which was returned amounted to 3316 billion cu. ft., I believe that the withdrawal from the fields in which I have included reserves totaled more than 3000 billion cu. ft.

Capacity to Produce Gas

It is now well known to natural gas men that although a field may contain a very substantial remaining reserve good for 10 or even 20 years' supply at the current rate of gas withdrawal, it is nevertheless something of a problem to secure during the winter months and the days of peak demand the quantity of gas needed for the attached markets. A notable example of this is our Appalachian field in which reserves of five trillion cu. ft. are more than 12 times the present annual production. Nevertheless, it has required in recent winters and it will require next winter during periods of peak demand that every well be open to maximum production and every horsepower of compressor capacity be in service. The utility serving a natural gas market must be, if possible, fortified with a substantial reserve of gas and also fortified with a reasonable excess capacity to produce gas. In recent years many of the utilities have found it possible to utilize to an ever-increasing extent gas storage fields located near their principal markets which aid greatly in the matter of peak delivery capacity. When gas shortages are imminent there is a tendency to take gas for the immediate need regardless of the future.

There is an old rule and it has the backing of law in some states that the withdrawal of gas shall not exceed 25% (or some other per cent) of the capacity of the well to produce against atmospheric pressure. This figure of 25% has become imbedded in the natural gas industry due only to the fact that it has long been used. There are wells, and many of them, which will not be hurt in the least if the pull on the well be all that the well can deliver. This situation prevails in fields where there is no water drive, known or imminent, and where the producing formation is solid and does not flow with the gas stream. Most of the wells in the Appalachian field are of this type. Exceptions are present in the Appalachian region, as, for example, in the Tilbury and other fields in southern Ontario. In the Gulf Coastal region danger exists if wells in many fields be permitted to even approach a continued delivery of only 15% of their open flow. Wherever the local conditions as revealed by geologic or other studies justify the conclusion that water encroachment is imminent or probable, gas production should be carefully regulated to the end that the greatest ultimate production from the field may be obtained. And it should always be recognized that natural gas, to be available for transport to distant markets, must be available in amounts to assure longevity to such projects.

Reprints in quantity of Mr. Davis' study may be had upon request. Address GAS, 1709 W. 8th St., Los Angeles, by Dec. 1.

Relation of Reserves to Increasing Gas Demand

The natural gas industry has grown enormously until it has become one of the major industries of this nation. The benefits of natural gas are shared directly by possibly 35 million people in this country and in 34 states and the District of Columbia. Indirectly all people in the country are benefited. The present annual production has a fuel value equivalent to about 100 million tons of coal or to about 425 million barrels of fuel oil.

To maintain this immense and increasing flow of gas it is necessary that conservation in the production of gas and the use of gas be widely practiced. Notable strides to this end have been made. Where necessary, peak deliveries are now met in part by gas stored in depleted fields. In Cleveland natural gas is placed in storage in liquid form to help meet the peak demand. Today substitute fuels are available at many industrial plants, insuring peak deliveries essential to domestic consumers.

Conservation of natural gas has been widely effected. Not only is much less gas now being wasted into the air but in its consumption great improvements in efficiency of use have been made. For example, the carbon black industry, once considered most inefficient in its use of natural gas, is now using and on an increasing scale new and greatly improved processes, to supplement the channel process. In 1941 the total black made from natural gas in this country amounted to 594 million lbs., and of this 106 million lbs. were made by the new processes in which about four to six times as much black is derived from each unit of natural gas as was previously made by the channel process. The plants now under construction in this country will bring about more than double the output of black by the new processes within another year. The importance of this will be more easily comprehended when we realize that more than 90% of the black used in this country is in the manufacture of rubber products and that the carbon black companies have developed a type of black particularly suitable for use with synthetic rubber in the war effort.

Value of Gasoline in Gas Manufacture

By R. W. STAFFORD
Connelly Iron Sponge & Governor Co., Chicago,
and
W. H. GANLEY
Falley PetroleumCo., Chicago

UPON a direct request from the Chicago Office of Petroleum Coordinator, an investigation was started to determine the possibilities of substituting raw gasoline as a gas enricher in place of fuel oils or gas oils. This included cracking tests made in an atmosphere of blue gas. It is our opinion that gasoline if properly handled can be used successfully for gas manufacturing purposes.

We do not recommend the use of gasoline under ordinary circumstances because of the price factor. However, we believe that due to the possible future conditions which may arise in the petroleum industry, information relative to the use of gasoline as an enriching agent would be of interest to the operating men of gas utilities.

There has been considerable time given to a study of this subject. Present market prices in some areas may prove it economical to use gasoline today. But regardless of the economics the utilities must continue to operate and if no priority set-up is put into effect and gas and oil become unobtainable, a suitable substitute must be found regardless of cost.

The possibilities of marketing gasoline for gas making purposes tax free are being further investigated. It is quite certain that in most of the states which carry a motor vehicle fuel tax, that tax would not be levied when the gasoline is used in a water gas set. The national authorities at Washington have been contacted for a ruling on the Federal gasoline tax. At the present time this matter is being given careful consideration by them.

In the use of raw gasoline (untreated and unleaded), instead of the present gas enriching oils, tests indicated that gasoline can be introduced into the top of the carburetor through the present oil sprays. It is suggested that an initial temperature of 1450° F. at the base of the super-heater be used. It may be necessary to operate at slightly higher temperatures. The temperature of 1450° F. in the cracking tests shown in Table No. 1 does not necessarily mean that it is the proper temperature to use in a water gas machine. In actual gas plant operations it may be necessary to determine the best cracking temperature experimentally.

Gasoline, being more fluid and volatile than gas oils, may leak through joints and connections in the oil line more readily than gas oils. Any gasoline that leaks through a pipe joint or connection will volatize very quickly, mix with the surrounding air, and may form an explosive mixture. Such a mixture can be readily ignited by flames from the stack valve or from the generator when charging fuel. In using gasoline, therefore, it is essential that all joints and connections in the oil lines be absolutely tight. This can be best accomplished by welding all joints and connections. If a gas oil system includes a small tank in which the oil is repressured with compressed air above the oil in the tank, gasoline should not be used with such an arrangement.

Since most states and cities have established rules and regulations regarding the storage and handling of gasoline, it is essential that the proper authorities be contacted regarding the storage of gasoline in existing gas oil storage tanks. It should be explained to the authorities that the use of gasoline instead of gas oil is an emergency measure for the duration of the war. While the authorities may not insist upon a strict enforcement of the regulations under the conditions, they will probably insist that the storage tanks be equipped with vents. It may also be well to contact the manager of a local gasoline bulk plant in your community to determine what safety devices are needed to safeguard your property.

The data shown cover tests made on raw gasoline as well as other gas enriching agents. In each case cracking tests were made in an atmosphere of blue gas using a small laboratory gas machine. The results obtained should be within 5% of those obtained under normal operating conditions using the oils tested.

The prices used in determining the costs per M c. f. for purposes of comparison are assumed. However, the necessary factors are shown so that comparisons can be made with your own individual costs.

In brief, when raw gasoline is used for gas making purposes, cracking tests indicate the following:

1. The heating value contributed to the gas per gallon of gasoline used is higher than that contributed by any of the other products tested except the 40° F. cold test U. G. I. gas oil.

2. The per cent of gasoline forming gas is higher than that obtained with any of the other products tested.

3. The per cent of gasoline forming tar is lower in comparison to all the other products tested except the 40° F. cold test U. G. I. gas oil.

Following the laboratory scale tests a practical plant test was made. The data herewith presented covers the results of operating tests made at the Fon du Lac plant of the Wisconsin Power and Light Co. on Sept. 2, 1942.

The water gas machine was a Semet-Solvay 8-ft. reverse flow type installed in 1938. The superheater contained 42 courses of checker brick, 88 bricks per course. The bricks were staggered with 2 in. spacing. The carburetor contained no checker brick.

The oil pump used was a Viking rotary pump directly connected to an electric motor which operates only when the oil is being introduced. The oil was metered through a National meter and introduced into the top of the carburetor through an Anthony spray. Normally the oil is preheated ahead of the meter. When introducing

THIS STUDY of the value of gasoline in making gas is important and timely. With fuel oil a scarcity, it is possible that there may be an abundance of third grade gasoline because of (1) the normally uneconomic use of this fuel in the manufacture of aviation fuels, (2) the enactment of nationwide gasoline rationing.

W. H. Ganley

R. W. Stafford

The use of this gasoline, therefore, as a substitute for present gas enriching oils, may solve one of the gas industry's pressing wartime production problems. Furthermore, the tests made at the Fond du Lac plant would seem to indicate that this volatile fuel can be handled practically and safely under plant conditions.

Mr. Stafford became chief engineer of Connelly Iron Sponge and Governor Co. in 1938. He has served the gas industry since 1930, when he became industrial engineer for the Peoples Gas Light and Coke Co., Chicago. He is a graduate of Northwestern University. Mr. Ganley has been active in the petroleum industry for the past 10 years, and for the past five years has been a representative of the Falley Petroleum Co., Chicago.

TABLE NO. 1. GAS ENRICHMENT VALUES OF VARIOUS PETROLEUM PRODUCTS

525 B. t. u. figures are based on figures in 1st column of each item except fuel oil.
xEstimating oil cost 5c @ gal., fuel cost $8 @ ton and tar credit 4c @ gal.
Estimating 34 lb. fuel producing 285 B. t. u. blue gas in making 525 B. t. u. gas. B. t. u. value of blue gas used in laboratory tests approximately 300.

	STRAIGHT RUN RAW GASOLINE			ZERO GAS OIL			40° F. U.G.I. GAS OIL			STRAIGHT RUN FUEL OIL		
Specific Gravity	.7320			.8309			.8453			.9247		
Baume Gravity	61.3			38.5			35.6			21.4		
BTU per gallon	123,200			140,300			142,000			148,400		
Sulphur Content	0.10			0.30			0.40			0.70		
Conradson Carbon Content				0.01			0.1			8.1		
Method of Determination	Lab Test	Lab Test	Calculated	Lab Test	Lab Test	Calculated	Lab Test	Lab Test	Calculated	Lab Test	Lab Test	Calculated
BTU of Finished Gas	570	545	525	540	537	525	533	536	525	568	573	525
Cracking Temperature, F°	1450°F	1550°		1350°	1400°		1350°	1400°		1525°	1425°	
Per cent forming gas (by wt)	71.5	73.1		66.5	66.7		66.7	63.8		50.9	52.1	
Per cent forming tar (by wt)	10.8	5.7		21.5	18.6		10.2	14.7		26.5	27.1	
Per cent forming carbon (by wt)	17.7	21.2		12.0	14.7		23.1	21.5		22.6	20.8	
BTU contributed to gas @ gal.	105,500	105,200		105,000	105,000		110,600	112,800		91,000	95,000	
BTU per cu. ft. of oil gas	1670	1531		1780	1677		2000	2054		1564	1477	
Cu. Ft. oil gas made @ gal. oil	63	68.7		59.1	62.6		54.9	56.5		58.2	64.3	
Per cent of Blue gas	80.6	79.2		83.7	82.8		86.3	86.1		80.2	78.4	
Per cent of Oil gas	19.4	20.8		16.3	17.2		13.7	13.9		19.8	21.6	
Gallons of oil per MCF	3.09	2.78	2.77	2.76	2.75	2.71	2.48	2.46	2.54	3.42	3.38	3.10
° Lbs. of Fuel per MCF	27.4	26.9	28.1	28.4	28.15	28.5	29.3	29.3	29.3	27.27	26.66	27.2
Gallons Tar per MCF	.232	.109	.21	.47	.41	.46	.202	.289	.21	.776	.785	.74
Tar per cent of Oil	7.4			17.0			8.1				.24	
x Net cost of Gas	25.48¢	24.22¢	24.25¢	23.20¢	23.41¢	23.11¢	23.32¢	22.86¢	23.58¢	24.91¢	24.42¢	23.42¢

gasoline the oil preheater was bypassed and the pressure was reduced to 45 lbs. The temperature of the gasoline was 75° F. This plant's oil lines have both threaded and welded joints.

The oil line from the tank truck to the machine and the oil pump were frequently inspected for leaks. Only one small leak developed, this being at the top of the carburetor where the oil line was connected to the oil spray. Since the gasoline was used directly from a truck tank, no information was developed regarding possible hazards of storing gasoline in existing gas oil storage tanks.

The pyrometer was located in the top of the superheater which on this type of machine corresponds to the base of the superheater on a standard three shell set. The pyrometer is connected to a Leeds and Northrup recorder.

The machine was equipped with air and steam meters and a U.G.I. automatic control. The B.t.u. content of the gas made was determined and recorded with a late model Thomas recording calorimeter.

The machine was operated for about an hour and a half with the fuel oil normally used. A switch was then made to gasoline without any changes in operation other than by passing the oil preheater.

The generator fuel was 100% coal, 1200 lbs. being charged every 12 runs. The coal used was a 5x2 Fleming Elkhorn containing 3½%.

The period of the test was 10.6 hrs. during which time 1965 gals. of gasoline were used.

The fuel bed in the generator was cleaned or clinkered the morning of the day before the test run. The normal practice at Fond du Lac is to clean the fuel bed after 40 hrs. operation. Since the machine is operated between 10 and 12 hrs. per day, the fuel bed is cleaned about twice a week.

The temperature at the top of the superheater was 1450° F. at the start of the test. Fourteen gals. of gasoline were used per run but this quantity was reduced to 11 gals. after two hrs. because of an increase in the B.t.u. content of the gas. At the same time the temperature was dropped to 1400° F. Operations were continued at this temperature for two hrs. and then temperatures were raised 50° at a time over a 2½ hr. period until 1650° F. was reached. After a small amount of lamp black appeared in the wash-box overflow and qualitative tests showed nahphthalene present, the temperatures were reduced to 1450° F. and held there during the last two hours of the test period.

The operating cycle used was as shown in Table No. 2:

Results shown in Table No. 3 are obtained with gasoline as compared with results obtained with other enriching agents normally used at the Fond du Lac plant:

These figures do not reflect the most efficient operation with gasoline because of changes in operation during the day, made in order to determine the effect of various cracking temperatures. The results shown on the other two enriching agents represent operating figures recorded over 30 day periods.

Trowel tests and observations of the washbox overflow indicated that the

TABLE NO. 2. OPERATING CYCLE

Blast	45 seconds	Total generator air—3400 cu. ft.
Blowrun	7 seconds	Total generator air— 450 cu. ft.
Uprun	99 seconds	30 lb. steam per minute
Backrun	52 seconds	75 lb. steam per minute
Final uprun	7 seconds	30 lb. steam per minute
Air purge	7 seconds	
Total cycle	217 seconds	

best cracking temperature for gasoline is about 1450° F. in this particular machine. At 1550 and 1600° F. a small amount of lampblack appeared in the washbox overflow. At 1400 to 1450° F. the naphthalene test showed none present. At 1500 to 1550° F. the test showed considerable naphthalene.

During this test the time of contact on this machine was 15 seconds, while with a standard three shell machine it will average about five seconds. Due to this difference in time of contact, a higher temperature will probably be required with a standard machine which has checker brick in both the carburetor and superheater.

The make per hour was lower with gasoline than with the crude oil and fuel oil. For the first four hours of the test, the average make per hour was 78.5 M c.f. During this period the temperature was around 1450° F. The higher temperatures (1500-1650°) required longer blast periods which increased the length of the cycle and reduced the number of cycles per hour. During the first four hours of the test period, the runs per hour averaged 17.5 and the make per run 4474 cu. ft. For the balance of the test period, the runs per hour averaged 12.4 and the make per run 5320 cu. ft., or 66.2 M c.f. per hour. If the temperature carried during the first four hours had been maintained throughout the entire test period, the average make per hour would undoubtedly have been between 75 and 80 M c.f.

While it was not possible to determine the amount of tar produced with gasoline, observations of the washbox overflow indicated that the tar production is considerably less than with the crude oil.

The results of tests and analysis of gas samples in Table No. 4 show actual analysis of samples taken during test operation. During these tests samples of all the back-run blue gases, up-run blue gases, and blast gases were collected in gas bags. They also show analysis of sample taken from outlet of storage holder before the use of gasoline was started. This represents the gas made under normal operations using crude oil.

In Test Number 1, these gases represent composite samples taken between the 33rd and 45th runs on gasoline and between the 5th and 6th coaling of the day's run. There were 12 runs during this period. In Test Number II, these gases represent composite samples taken between the 93rd and 105th runs on gasoline and between the 10th and 11th coaling of the day's run. There were 12 runs during this period.

These sets of samples were taken from the machine as follows:

TABLE NO. 3. COMPARISON OF RESULTS OBTAINED WITH GASOLINE AND OTHER ENRICHING AGENTS

	Gasoline	*Crude Oil*	*Fuel Oil*
B. t. u. of finished gas	519	522	522
Fuel—Lbs. per M c. f.	22.2	22.1	22.5
Oil—Gallons per M c. f.	2.60	3 04	2.93
Make per hour—M c. f.	71.2	78.8	79.5
Make per run—Cu. ft.	4900	5434	5480
Steam—Lbs. per M c. f.	24.2	21.8	21.6
Generator air—Cu. ft. per M c. f.	785	710	703
Cu. ft. air per lb. steam	32.4	32.5	32.5
Per cent backrun steam	55	55	55
B. t. u. contributed to gas per gal.	116,000	100,000	103.000
Cu. ft. oil gas per gal.	75.0	67.5	70.5
B. t. u. per cu. ft. oil gas	1550	1480	1460
H_2S grains per 100 cu. ft.	70	140*	100

*This oil contained 2½% sulphur.

1. Blast gases taken from top of generator during the blast period.
2. Uprun blue gas taken from top of generator during the uprun period.
3. Backrun blue gas taken from backrun pipe during the backrun period.

Two samples were taken at the outlet of the purifiers. One sample was taken about three hours after the test started; the other was taken four hours later. These samples represented the finished gas made with gasoline.

All gas analyses were made by the Bureau of Mines Gas Analyzer over mercury and are reported in per cent by volume.

The hydrogen sulphide tests were made by means of the Tutweiler Burette.

The specific gravity tests were made by the Schilling Gas Density apparatus.

The naphthalene tests were made by passing the gas through picric acid solution and observing the presence or absence of a precipitate. This test was only qualitative.

The heating values of the gas produced were taken from a Thomas Calorimeter chart.

For purposes of comparison the composition of the combined up-run and back-run blue gas was calculated as follows:

Since 55% of the total steam used per run was used on the backrun, it was assumed that 55% of the total blue gas made per run was made on the backrun and 45% on the uprun. The composition of the combined uprun and backrun blue gas was calculated by taking 45% of the constituents of the uprun blue gas and adding it to 55% of the constituents of the backrun blue gas. This was done with the blue gas analyses of Tests I and II and the results of the two tests were averaged. An average was also made of the blast gas analyses of both tests.

The calculated average composition of the total blue gas made, blast gases and finished gas is as follows:

Sample	*Blast Gas*	*Blue Gas*	*Finished Gas*
Carbon dioxide	13.7	4.5	5.3
Illuminants	0.1	0.4	9.3
Oxygen	0.8	0.8	0.4
Carbon monoxide	8.8	30.4	22.3
Hydrogen	3.4	52.0	31.1
Methane	0.4	3.5	10.4
Ethane	....	.....	2.0
Nitrogen	72.8	8.4	19.2
Total	100.0	100.0	100.0
B. t. u. calculated	43	305	519

The cubic foot of blast gas made per cubic foot of generator air was calculated by dividing the nitrogen in the blast gases into the nitrogen in air (79%). This gave 1.085. The average amount of generator air used per blowrun was 450 cu. ft., which produced 488 cu. ft. of blowrun gas per run.

The percentage of blue gas in the finished gas was calculated from the percentage of carbon monoxide in the blue gas and the finished gas. The carbon monoxide content of the finished gas was corrected for the carbon monoxide in the blowrun gas. This correction was made by deducting 10% of the carbon monoxide in the blowrun gas (blast gas) from the percentage of carbon monoxide in the finished gas. This gave the per cent of carbon monoxide in the finished gas due to the blue gas. The percentage of blue gas in the finished gas was calculated by dividing the percent of carbon monoxide in the blue gas into the percent of carbon monoxide in the finished gas. The per cent of oil gas in the finished gas was taken as the difference between 100 and the combined blue gas and blowrun gas. (Blue gas includes whatever coal gas was recovered from the coal used for generator fuel.)

Assuming the same composition for the blue gas and blowrun gas with

TABLE NO. 3. RESULTS OF TESTS AND ANALYSES OF GAS SAMPLES

Note: Analyses reported in per cent by volume.
xAverage of 26 readings from Thomas Calorimeter chart over entire period of test.

Enriching Medium	Crude Oil	Test Number I—Gasoline Used as Enriching Medium				Test Number II—Gasoline Used as Enriching Medium				
Method of Sampling	Snap Sample	Composite Sample of Gases Taken Between 33rd and 45th Runs on Gasoline and Between 5th and 6th Cooling of Day's Run. Total of 12 Runs.			Snap Sample	Composite Sample of Gases Taken Between 93rd and 105th Runs on Gasoline and Between 10th and 11th Cooling of Day's Run. Total of 12 Runs.			Snap Sample	Average of Finished Gas Samples, Test No. I and No. II.
Sampling Point	Sendout Line	Top of Generator		Backrun Pipe	Outlet of Purifiers	Top of Generator		Backrun Pipe	Outlet of Purifiers	
Kind of Gas	Regular City Gas	Uprun Blue Gas	Blast Gas	Backrun Blue Gas	Finished Gas	Uprun Blue Gas	Blast Gas	Backrun Blue Gas	Finished Gas	
Carbon Dioxide	5.6	3.4	14.0	4.8	5.4	4.2	13.4	5.6	5.2	5.3
Illuminants	8.8	0.8	0.0	0.4	10.0	0.4	0.1	0.2	8.6	9.3
Oxygen	0.6	1.0	1.2	0.8	0.2	0.4	0.4	1.0	0.6	0.4
Carbon Monoxide	22.2	34.6	8.2	26.0	22.0	38.0	9.4	25.0	22.6	22.3
Hydrogen	30.4	45.8	3.2	58.4	30.2	41.7	3.6	59.6	32.0	31.1
Methane	13.2	2.6	0.3	4.1	10.6	3.3	0.5	3.6	10.1	10.4
Ethane	1.2	0.0	0.0	0.0	2.0	0.0	0.0	0.0	1.9	2.0
Nitrogen	18.0	11.8	73.1	5.5	19.6	12.0	72.6	5.0	19.0	19.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BTU per Cubic Foot of Gas — Thomas Calorimeter	518				526				515	519 x
BTU Calculated		297.	39.	317.		294	46.	309		
Specific Gravity (Air — 1)	0.690				0.702				0.670	0.685
Hydrogen Sulphide Grains per 100 Cu. Ft. of Gas—at Inlet to Purifiers	140				60				80	70
Naphthalene—at Outlet of Purifiers					No Precipitate				Precipitate Formed	—

normal operation using crude oil and fuel oil, the finished gas was calculated to contain the following:

	Gasoline	*Crude Oil*	*Fuel Oil*
% blowrun gas	10.0	9.0	8.9
% blue gas	70.5	70.5	70.5
% oil gas	19.5	20.5	20.6
B.t.u. due to oil gas	301.5	303.0	303.0

From these results and the oil used per M c.f., the B.t.u. per gallon, cubic feet of oil gas made per gallon, and the B.t.u. per cubic foot of oil gas were calculated.

Based on gasoline containing 123,000 B.t.u. per gallon, a cracking efficiency of 94% was obtained by calculation. This compares with a cracking efficiency of 70% with the oils normally used.

Due to the use of coal and blowrun, the Pacific Coast method of calculating oil efficiencies could not be used. Since carbon monoxide is a product of the blue gas reaction and is not formed by any cracking as hydrogen is, the method used for calculating oil efficiency was considered the best.

Briefly, the above data indicates the following:

1. Raw gasoline can be successfully gasified in a carburetted water gas machine.

2. These tests indicated a cracking temperature of about 1450° F. as the best for Fond du Lac. It is believed that with a standard three shell machine a higher temperature will be required. For any given machine, the proper temperature should be determined experimentally.

3. The set capacity is approximately the same with gasoline as with the oils normally used in the manufacture of carburetted water gas.

4. Higher fuel cracking efficiencies can be obtained by the use of gasoline.

5. The tar produced from gasoline is materially less than from the oils normally used.

6. The main problem in the use of gasoline is handling and storage, including state and local regulations.

7. With the present price and tax structure, it is not economical to use gasoline. Action should be started to have the 1½c Federal tax law changed so that it will not apply on gasoline used for gas making purposes, since it would be used to release fuel oils and gas oils which are badly needed by war industries which are unable to convert to gasoline.

Based on current costs of gasoline, the Fond du Lac test, including Federal tax, ran slightly over 8c per M c.f., in excess of costs using fuel oil at present market price. This is exclusive of tar credits which would increase the differential still further.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to Mr. R. G. Walter, Assistant to Executive Vice-President, Wisconsin Power & Light Company, Madison, Wisconsin, for granting us permission to make the test run and to the following men who were present or otherwise contributed toward the presentation of this information:

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S. Cohn, senior chemist, The Peoples Gas Light & Coke Co., Chicago, Ill.

C. F. Cramer, superintendent, Manufactured Gas Department, Ohio Fuel Gas Co., Toledo, Ohio.

John Dopp, superintendent of gas plant, Wisconsin Power and Light Co., Fon du Lac, Wisc.

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H. E. Sweet, gas engineer, Wisconsin Power and Light Co., Madison, Wisc.

L. J. Willien, gas engineer, Public Utility Engineering and Service Corp., Chicago, Ill.

Gas Utility Records Preserved in Microfilm

In spite of fire, flood or bombs, the countless valuable records of Citizens Gas & Coke Utility, Indianapolis, Ind., will be preserved for all time to come. These irreplaceable records, which include every inch of the pipe line laid in the district since 1870, have been microfilmed and now rest securely within the walls of a sturdy steel vault.

By this new scientific process all the contents of 113 file drawers, five large books and five maps were condensed on film in 48 metal containers which now occupy only one file drawer.

The method of microfilm is simple. On a piece of film no larger than a special delivery postage stamp three service orders or service repair orders, each 4½ in. by 9¼ in. are photographed. When projected on a screen or enlarged on special paper, every minute detail of the originals can be read.

ASSOCIATIONS

VICTORY - THE INDUSTRY'S SINGLE PURPOSE

(A Report of the A.G.A. Annual Meeting in Chicago)

PLEDGING anew the whole-hearted cooperation of the entire gas industry to the war effort, some 800 members attended the 24th Annual Meeting of the American Gas Association at the Hotel La Salle, Chicago, Monday and Tuesday, Oct. 5 and 6.

This first AGA convention in wartime, although streamlined to a two-day duration, was one of the most successful to date with members particularly anxious to see all, know all, and hear all that might reflect or influence the wartime efforts of the industry, and thus hasten the day of democratic victory.

While they stated that the industry has made splendid contributions to the war program, speakers stressed the further need of complete unity and unlimited ingenuity within the industry if it is to render its best service.

General Sessions

"The gas industry during and after the war" was the topic trend of discussion at the general sessions held Tuesday.

Excerpts from the presidential address by George S. Hawley, Bridgeport (Conn.) Gas Light Co., appear elsewhere in this issue of *GAS*, as does an excerpt from Ernest R. Acker's address as chairman of the committee on war activity.

With "The War Effort, Enforcement" as his subject, Mason Manghum, Compliance Division, WPB, stressed the importance of winning the war first—before the peace, and paying less attention to post-war activities. In his remarks he urged the industry to organize itself for the war effort in preference to having others without the industry do the organizing.

A. M. Beebee, Rochester Gas & Electric Corp., chairman of the new Post-War Planning Committee, outlined the objectives of the committee to include: domestic gas research; research on gas production; revision of former studies on gas and electric distribution; surveys on appliance saturation on lines; survey of markets for gas industry after war; study of advertising needs and trends; study of home insulation needs.

Advocating that it is the industry's biggest task today to provide more and more service with less and less equipment and manpower, J. A. Krug, deputy director-general for Priorities Control, WPB, addressed the afternoon session. Mr. Krug suggested that the gas industry advance along the lines of having women do meter reading and testing work, thus relieving men when necessary for active war service.

John W. Batten, vice president, Michigan Consolidated Gas Co., Detroit, Mich., as chairman of the Committee on Industrial Gas Research, reported on the wartime program of his group. The report of R. L. Fletcher, vice president, Providence (R. I.) Gas Co., as chairman of the committee on domestic gas research, was given by John J. Quinn, Boston (Mass.) Consolidated Gas Co.

Dr. F. W. Sullivan, Jr., technical director, Institute of Gas Technology, Chicago, Ill., gave an interesting account of the Institute's research on the preparation of butadiene and its investigations on absorption in relation to the production of active carbon for gas masks.

J. French Robinson, president, East Ohio Gas Co., Cleveland, and retiring chairman of the natural gas section of the AGA, presented a paper at the general session disclosing new methods of transportation of natural gas by shipload on cargo ships.

Natural Gas Section

Officers for 1942-43

Chairman—Burt R. Bay, Northern Natural Gas Co., Omaha, Neb.

Vice chairman—R. E. Wertz, Amarillo Gas Co., Amarillo, Texas.

A number of notable papers were presented at the Natural Gas Section on Monday from such outstanding leaders of the industry as Burt R. Bay,

NEW A. G. A. OFFICERS FOR 1942-1943

President

Arthur F. Bridge, vice president and general manager, Southern Counties Gas Co., Los Angeles, Calif.

Vice President

Ernest R. Acker, president, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.

Treasurer

J. L. Llewellyn, insurance manager, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Directors—Two-Year Terms

John W. Batten, vice president and general manager, Michigan Consolidated Gas Co., Detroit, Mich.

James A. Brown, engineer in charge of gas operations, Commonwealth & Southern Corp., New York, N. Y.

D. W. Harris, vice president and general manager, Arkansas Louisiana Gas Co., Shreveport, La.

H. N. Mallon, president, Dresser Manufacturing Co., Bradford, Pa.

Hudson W. Reed, executive vice president, The Philadelphia Gas Works Co., Philadelphia, Pa.

W. F. Rockwell, president, Pittsburgh Equitable Meter Co., Pittsburgh, Pa.

Herman Russell, president, Rochester Gas & Electric Corp., Rochester, N. Y.

Marcy L. Sperry, president, Washington Gas Light Co., Washington, D. C.

T. J. Strickler, vice president and general manager, Kansas City Gas Co., Kansas City, Mo.

P. S. Young, chairman, executive committee, Public Service Electric & Gas Co., Newark, N. J.

R. G. Barnett, vice president and general manager, Portland Gas & Coke Co., Portland, Ore.

AMERICAN GAS ASSOCIATION AWARDS

Beal Medal

This medal, highest technical recognition in the gas industry, was awarded to **R. E. Kruger,** superintendent of gas manufacturing of the Rochester Gas & Electric Corp., Rochester, N. Y., for contributing the best technical paper to meetings of the Association throughout the year. The award, consisting of a bronze medal and a cash payment, was presented by the donor, Ernest R. Acker, president, ing the Rochester Gas & Electric Corp., Poughkeepsie, N. Y., on behalf of the family of the late W. R. Beal, who established it in 1897.

Mr. Kruger, whose paper, "Interesting Developments Concerning the Saving of Gas Oil by Mixing High B. t. u. Coke Oven and Blue Gas," won him distinction, joined the Rochester Gas & Electric Corp. as cadet engineer in 1916. Prior to joining the Rochester Gas & Electrc Corp., where he has spent his entire business career, Mr. Kruger received his Bachelor of Science degree from the University of Rochester. The new Beal award winner is a member of the American Chemical Society, Rochester Engineering Society, Rochester Chamber of Commerce and the A. G. A.

Charles A. Munroe Award

The highest honor to be conferred by the American Gas Association in the form of the Charles A. Munroe Award was bestowed upon **W. M. Hepburn,** vice president of Surface Combustion Corp., Toledo, Ohio. Consisting of a substantial financial acknowledgment and engrossed certificate, the award was made to Mr. Hepburn for his outstanding achievement in translating gas service in industrial utilization equipment.

Among the developments which have come under Mr. Hepburn's direction and bear the imprint of his ingenuity and sound engineering ability are diffusion combustion, continuous gas carburizers, DX gas atmosphere, gas preparation machines, walking bean and a variety of material handling mechanisms on furnaces of the walking bean type, one-way soaking pits, normalizing for full finished automobile sheets for deep drawing, bright annealing of both ferrous and non-ferrous metals, radiant tubes and convection furnaces.

Mr. Hepburn's contributions to the art of industrial gas utilization have been among the more important reasons why industrial gas was in a position immediately to carry its share of the war production factory load and will enable gas to continue being an important factor in war production for the duration.

Mr. Hepburn graduated from Cornell University in 1911 with a mechanical engineering degree and for four years was employed by the United Gas Improvement Co. In 1915 he joined Surface Combustion, and after serving in the World War he rejoined that company in 1919, serving in the engineering and sales departments. He was named vice president of that firm in 1924 and in 1927 was elevated to vice president in charge of engineering, in which position he has continued.

Safety Awards

These awards, presented for achievements in accumulating one million or more man-hours without a disabling injury accident, went to one division of the Oklahoma Natural Gas Co., Tulsa, Okla., and five divisions of the Ohio Fuel Gas Co., Columbus, Ohio. The prizes which were recommended by the Accident Prevention Committee and approved by the Executive Board were presented by President George S. Hawley of A. G. A.

The award to the Oklahoma Natural Gas Co. was made to the Oklahoma district of that company. The awards to the Ohio Fuel Gas Co. were presented to the Elyria, Toledo, Northern Compressor division, Columbus; distribution department, District No. 5, Mansfield; and the Southern Compressor division, Columbus.

president, Northern Natural Gas Co., Omaha, Neb., and chairman-elect of the Natural Gas Section; J. French Robinson, president, The East Ohio Gas Co., Cleveland, and 1942 chairman of the Natural Gas Section; A. G. A. President-elect A. F. Bridge, vice president and general manager, Southern Counties Gas Co., Los Angeles; and E. Holley Poe, director of Natural Gas and Natural Gasoline Division of the Office of Petroleum Coordinator for War.

Taking part in the symposium, "War Requirements in the Natural Gas Districts," which was led by J. French Robinson, N. C. McGowan, president, United Gas Pipeline Co., Shreveport, La., chairman OPC district No. 3, told of the surveys of gas reserves, markets and transportation facilities being conducted in his district. He said that unless radical changes are made No. 3 district will be unable to meet its fuel requirements. Mr. McGowan also related the physical study being made in his territory to determine how new gas supply lines can be tied together with existing lines, thus releasing some of the lines for transportation of oil into the eastern carriers.

R. W. Hendee, general manager, Colorado Interstate Gas Co., Colorado Springs, Colo., in reporting as chairman of OPC district No. 4 told of a plan evolved in his district to prevent unnecessary cross-country hauling of crude and refined products.

As chairman of OPC district No. 4, Wm. Moeller, Jr., vice president, Southern California Gas Co., Los Angeles, spoke of the problems of his section's seasonal load and the need for equalizing it, possibly by underground storage, a project now under way in California. In his area increased wartime activities have increased the daily industrial gas demand by some 55 million cu. ft. over last year's demand.

"Because of the expanding demands for gas at a time when steel cannot be spared to augment facilities, pooling of supplies and transmission facilities may be asked for from competitive companies," said Martin T. Bennett, chief of the gas supply section of WPB, when he addressed the Natural Gas Section to clarify WPB orders and their application.

Stressing the critical nature of the steel situation, Mr. Bennett offered the following suggestions for decreasing load factors:

1. Storage of gas at or near markets.
2. Consolidation of transportation systems, with one company transporting for another so that transmission capacity will not be duplicated.
3. Operation of manufactured gas standby faciliteis near the markets.
4. Curtailment, which may have to be classified still further as the trend of all industry to war purposes continues.
5. Conversion of large users of natural gas to other fuels.

Technical Session

Officers for 1942-43

Chairman — Harold L. Gaidry, New Orleans Public Service, Inc., New Orleans, La.

Vice chairman—Charles F. Turner, East Ohio Gas Co., Cleveland, Ohio.

Outstanding technical projects launched in connection with the war effort came in for the majority of discussion at the Technical Section meeting. Chairman H. L. Gaidry presided, and following his remarks Ernest R. Acker, Poughkeepsie, N. Y., delivered an address on "The Technical Section's Place in the War Effort." Pronouncing this a technician's war, Mr. Acker said that now more than ever before in the history of the world, the technical man's work is of paramount importance. He discussed the problems of tin content of solder and the substitution of gasoline for oil in the making of gas. (See page 27.)

In reporting as chairman of the Technical Section's Committee on War Activities, D. P. Hartson, Equitable Gas Co., Pittsburgh, Pa., told of the contributions of his committee to the industry and its ability to foresee problems and prepare to meet them.

Speaking on "Conservation of Gas Oil," L. J. Willien, Public Utility Engineering & Service Corp., Chicago, dealt with the work being done on substituting low-grade gasoline for gas oil. It was related that the government is hopeful of using this product, to be called Motor Fuel Distillate, and is interested in the effect it will have in increasing plant capacities.

The report on tin content in solder

prepared by C. S. Goldsmith, Brooklyn (N. Y.) Union Gas Co., was delivered by H. B. Anderson, Philadelphia (Pa.) Gas Works Co.

Other speakers to present papers included: Linn Edsall, Philadelphia, Pa., "New ODT General Order 21 and Its Possible Effect on Public Utility Fleets"; Louis Shnidman, Rochester (N. Y.) Gas & Electric Corp., "Nitric Oxide Control"; Dr. E. W. Guernsey, Consolidated Gas, Electric Light & Power Co., Baltimore, "Research on Organic Sulfur"; Dr. R. E. Hadley, Susquehanna Pipe Line Co., Philadelphia, "Research on Microbiological Anaerobic Corrosion."

Residential Section

Officers for 1942-43

Chairman—B. A. Seiple, Jersey Central Power & Light Co., Asbury Park, N. J.

Vice chairman—C. V. Sorenson, Midland Utilities Co., Hammond, Ind.

The Residential Section meeting opened with an address by Chairman E. J. Boyer, sales manager, Minneapolis Gas Light Co., Minneapolis, Minn., in which he outlined the methods used by his company in keeping its customers abreast of its operating problems in wartime.

"Maintaining Customer Contacts During the War" was the subject of a message by R. J. Vandagriff, sales manager, The Laclede Gas Light Co., St. Louis, Mo. He supplemented his remarks with samples of advertising copy produced by his company and samples of customer surveys being conducted.

In the absence of R. L. Fletcher, vice president, Providence Gas Co., Providence, R. I., his paper, "What About Domestic Gas Research," was read by F. Marion Banks, Los Angeles. Mr. Banks contributed facts of his own on the research laboratory work.

Contending that gas will fall into that group of tangible things which are bound to exist after the war, C. V. Sorenson, Northern Indiana Public Service Co., Hammond, Ind., expounded many worthy points in his address, "Planning and Preparing for Post-War Sales." He said that the utilities must analyze the probable markets for post-war days and supply essential market data for use by themselves, dealers and manufacturers.

George S. Jones, Jr., Servel, Inc., Evansville, Ind., told of how the training and experience of the salesman of the gas industry is proving invaluable in relaying the message of proper preservation and preparation of food for war industry workers. The "Nutrition in Industry" program is being sponsored by Servel, Inc.

Industrial and Commercial Section

Officers for 1942-43

Chairman — B. H. Gardner, Columbia Gas & Electric Corp., Columbus, Ohio.

Vice chairman—Charles G. Young, Springfield Gas Light Co., Springfield, Mass.

George F. B. Owens, The Brooklyn Union Gas Co., Brooklyn, N. Y., and James E. Dare, Public Service Co. of Northern Illinois, Streator, Ill., chairmen respectively of the Industrial and Commercial Section and the Midwest Industrial Gas Sales Council, spoke briefly at a luncheon sponsored jointly by the two committees.

The principal luncheon speaker was Major John L. King, chief of Fuel Section, Resources Division, War Department, Washington, D. C. He spoke of the increasing demands of the coming winter and of the necessity of the gas companies approaching 100% load factor and he urged that every installation that could be should be converted to other fuels.

The afternoon meeting, with Chairman Owens presiding, was devoted largely to a discussion of the following questions recommended by members of the Managing Committee:

1. Industrial and commercial gas operations under Limitation Orders L-31 and L-174; public relations under limitation orders.

2. Are any criterions being developed for determining terms of acceptance of industrial temporary loads on the basis of adequate return and amortization over a short period?

3. What are most important things industrial and commercial salesmen can do to help war effort? What measuring stick can be used to determine if gas company contacts with industrial and commercial customers are being adequately maintained during war conditions?

4. All factors considered, has the position of gas in the commercial cooking and baking fields been enhanced from the competitive and other angles by the experiences in the camps, war posts, etc.?

5. Maintaining commercial cooking equipment under war conditions, where A-1-J priority or better is required for replacement of new equipment.

6. Experiences with auxiliary fuel and auxiliary fuel utilization equipment for industrial customers; effect on future business.

7. Effect of priorities, etc., on industrial gas equipment.

8. Recent progress in applying gas to aluminum heat treating.

9. Can industrial gas men effectively help small manufacturers secure war contracts?

10. All too frequently the statement is made that certain types of industrial gas loads are not profitable to gas companies. Should all activities be directed toward developing, advertising and publicizing only those processes that show increased thermal efficiencies compared with oil fuel? Is it better to have a smaller load all portions of which are regarded as definitely profitable, rather than larger loads with questionable profit?

11. Effect of national nutrition plan on relations with commercial cooking and baking customers.

12. Application of step rates, minimum bills, etc., to billing of industrial customers during periods of curtailment.

Accounting Section

Officers for 1942-43

Chairman—L. A. Mayo, Connecticut Light & Power Co., Hartford, Conn.

Vice chairman—O. H. Ritenour, Washington Gas Light Co., Washington, D. C.

At interesting and well-attended meetings, the Accounting Section headed by L. L. Dyer, Lone Star Gas Co., Dallas, Texas, discussed such timely topics as labor and material shortages, bi-monthly and quarterly meter readings, women meter readers, billing plans, priorities accounting, insurance depreciation, collection without collectors, and taxation accounting.

H. C. Hasbrouck, chairman of the committee on depreciation accounting, spoke on a "Summary of Developments in Depreciation Accounting."

The section was divided into two groups, the Customer Activities group, chairmaned by G. W. Fuchs, Philadelphia Electric Co., Philadelphia, Pa., and the General Accounting Activities group under the direction of O. H. Ritenour, Washington Gas Light Co., Washington, D. C. In Mr. Fuchs' group individual meetings were conducted by the following: E. F. Embree, New Haven Gas Light Co., New Haven, Conn., customer accounting; W. R. Seidel, Rochester Gas & Electric Corp., Rochester, N. Y., customer collections; and Ohmer Ullery, The Ohio Fuel Gas Co., Columbus, Ohio, customer relations. In Mr. Ritenour's group the separate meetings were led by: R. E. Hull, United Gas Pipe Line Co., Shreveport, La., general accounting; Carl H. zur Nieden, Philadelphia Electric Co., Philadelphia, Pa., materials and supplies; E. F. Wressell, Northern Indiana Public Service Co., Hammond, Ind., property records; R. M. Campbell, Standard Oil Co. of New Jersey, New York, N. Y., taxation accounting; and Reginald Fleming, New York, insurance.

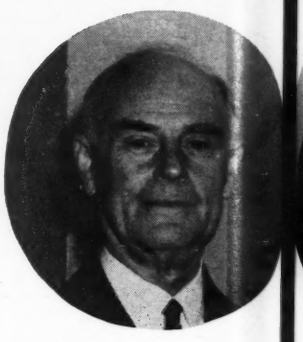
Gas Camera Catch

E. Holley Poe, director, Natural Gas and Natural Gasoline Division of the Office of Petroleum Coordinator for War.

Above: G. S. Jones, Jr., Servel, Inc., Evansville, Ind. H. Carl Wolf, Atlanta Gas Light Co., Atlanta, Ga.; W. L. Hutcheson, Manufacturers Light & Heat Co., Pittsburgh, Pa.; and R. J. Vandagriff, Laclede Gas Co., St. Louis, Mo.

Above: L. A. Evarts, Long Island Lighting Co., Garden City, N. Y.; Fred McMurray, M. B. Skinner Co., South Bend, Ind.; and A. F. Lindeman, Northern Indiana Public Service Co., Gary, Ind.

A. G. A. President George S. H ley, Bridgeport (Conn.) Gas Light had the responsibility of adjus the Association's activities to the mands of this first year of wa



Left: I. K. Peck, Binghamton Gas Works, Binghamton, N. Y.; M. L. Stirling, Dowell, Inc., Tulsa, Okla.; and J. G. Dickinson, Texoma Natural Gas Co., Amarillo, Texas.

Above: C. H. Waring, Kansas City Gas Co., K sas City, Mo.; C. E. Gill, Natural Gas Odorizi Co., Chicago; and H. A. Clark, Michigan Cons dated Gas Co., Detroit.

Center, left: H. R. Peirce, Sprague Meter Co., Davenport, Iowa; C. D. Robinson, Metropolitan Utilities District, Omaha, Neb.; and J. M. Robertson, Houston Natural Gas Co., Houston, Texas.

Lower left: F. T. Rainey, The Ohio Fuel Gas Co., Columbus, Ohio; W. M. Hepburn, vice president, Surface Combustion Co., Toledo, Ohio, and winner of the Charles A. Munroe Award; F. H. Adams, Surface Combustion Co.; and K. R. Boyes, American Gas Association, standing behind group.

Below: R. E. Wertz, Amarillo Gas Co., Amarillo, Texas; and Alexander Forward, American Gas Association, New York City.

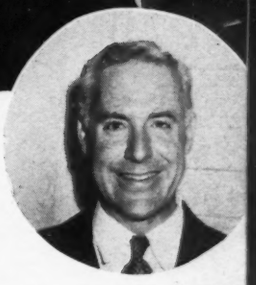
Below: R. M. Conner, American Gas Associati Cleveland, Ohio; R. G. Griswold, Electric Advis Inc., New York; and T. J. Strickler, Kansas C Gas Co., Kansas City, Mo.

Convention Delegates

G.A. President-elect A. F. Bridge is vice president and general manager of the Southern Counties Gas Co., Los Angeles, Calif.

Above: H. B. Anderson, Philadelphia Gas Works, Philadelphia, Pa.; D. P. Hartson, Equitable Gas Co., Pittsburgh, Pa.; and Harold Gaidry, New Orleans Public Service Co., New Orleans, La.

Above: P. R. Taylor, Stone & Webster, New York, N. Y.; E. F. Schmidt, Lone Star Gas Co., Dallas, Texas; and E. P. Noppel, Ebasco Services, Inc., New York.



Ernest R. Acker, Central Hudson Gas & Electric Co., Poughkeepsie, is vice president-elect of the Association.

Above: M. K. Wrench, Metropolitan Utilities District, Omaha, Neb.; L. J. Willien, Public Utility Engineering and Service Corp., Chicago; and R. D. Stafford, Connelly Iron Sponge & Covernor Co., Chicago, Ill.

Right: Herman Russell, Rochester Gas & Electric Corp., Rochester, N. Y.; F. C. Brown, Natural Gas Pipeline Co., Chicago; H. J. Carson, Northern Natural Gas Co., Omaha; and Oliver S. Hagerman, Atlantic Seaboard Corp., New York, N. Y.

Center, right: M. J. Hiler, Sharples Chemicals, Inc., Chicago; L. J. Eck, Minneapolis Gas Light Co., Minneapolis; and G. C. Garrison, Sharples Chemicals, Inc., Chicago.

Lower right: Willard F. Rockwell, Pittsburgh Equitable Meter Co., Pittsburgh; George B. McComb, The Barrett Co., New York, N. Y.; and John West, American Gas Association.

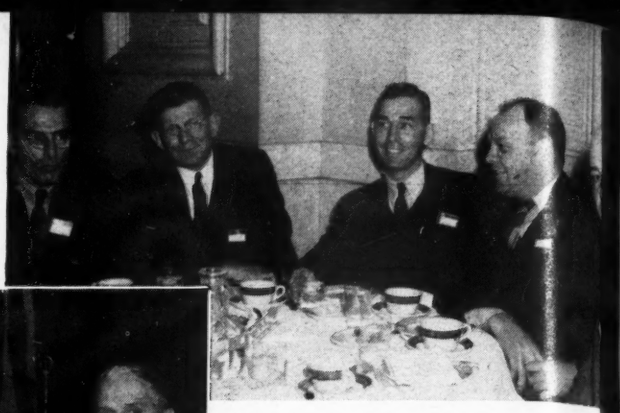
◆

Below: Burt R. Bay, Northern Natural Gas Co., Omaha, Neb.; Miss H. Moomaw, acting secretary, Natural Gas Department; and J. French Robinson, East Ohio Gas Co., Cleveland.

Below: George F. Briggmann, Carbide & Carbon Chemicals Corp., New York; and W. M. Little, Arkansas-Louisiana Gas Co., Shreveport.

Above: F. M. Houston, Rochester Gas & Electric Co., Rochester, N. Y.; B. A. Seiple, Jersey Central Power & Light Co., Asbury Park, N. J.; W. H. Van Riper and Paul J. Dorsey, Cribben & Sexton Co., Chicago.

Delegates at the A. G. A. Annual Meeting



Wm. Moeller, Jr., Southern California Gas Co., Los Angeles; and W. G. Hagan, East Ohio Gas Co., Cleveland.

Right: Robert W. Handee, Colorado Interstate Gas Co., Colorado Springs; F. T. Parks, Public Service Co. of Colorado, Denver;

Above: Dale Emington, Wisconsin Public Service Corp., Green Bay, Wis.; Dan Blake and J. M. Pickford, Northern Indiana Public Service Co., Hammond, Ind.; and A. C. Davey, Wisconsin Public Service Corp., Oshkosh, Wis.; and Floyd Gaus, Reynolds Gas Regulator Co., Anderson, Ind.

Home Service Section

When the Home Service Section held a breakfast meeting on Tuesday greetings were extended to the members by George S. Hawley, A. G. A. president; Alexander Forward, A. G. A. managing director; and E. J. Boyer, chairman of the Residential Section.

Miss Jeanette Campbell, Minneapolis home service director, Minneapolis Gas Light Co., in speaking of "War Service for Home Service" commented on the need for renewed emphasis on nutrition both in industry and in the home. Dr. Robert S. Goodhart, technical adviser, nutrition in industry, Office of Defense Health and Welfare, Washington, D. C., said, "We owe it to ourselves and to our country to cooperate in this nutrition program."

Other important aspects of the industrial nutrition program were also presented by Louis Ruthenburg, president, Servel, Inc., in his talk, "Eat to Beat the Devil." He briefly related what his own plant in Evansville, Ind., is doing to improve eating habits and reduce absenteeism by means of conforming to government-recommended food rules.

Appearing as the final speaker at the Home Service breakfast, Ernest R. Acker verbally sketched the coming program of national publicity on fuel conservation to be conducted by the Government.

Supplers Meeting

Two hundred Supplers and Burghers took time off from the serious discussions of the A. G. A. War Meeting at Chicago to spend a festive few hours Monday evening, Oct. 5, at the Gild Wassail. This annual event is held by the Gild of Ancient Supplers each year at the A. G. A. meeting.

This year the Gild, in tune with the war note of the A. G. A. meeting, presented as a memento of the event a leather wallet with a war savings stamp book containing $2.50 worth of stamps.

Earlier in the afternoon the Gild held its annual meeting at which a motion was passed confirming the mail vote on two amendments to the constitution which made all past mayors officers of the Gild and placed the immediate past mayor on the great council.

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CONVENTION ABSTRACTS

Presidential Address

GEORGE S. HAWLEY, president, Bridgeport Gas Light Co., Bridgeport, Conn., and president, American Gas Association.

In these difficult and puzzling circumstances we cannot accomplish much individually, no matter how well informed we may be. Fortunately we are united as an industry under the banner of the American Gas Association. Almost every day since last December the Association has served as the official spokesman for the gas industry in matters referred to it by various departments of the National Government and having to do with the prosecution of the war. In normal times united action under the auspices of the Association is highly important, but in a time of emergency it is absolutely essential. Membership now more than ever is a badge of faith and confidence in our industry and our country.

One thing above all others that this war has taught is the necessity of preparation for what lies ahead, and one of the most important factors in this preparation is research.

There is one particular and immediate problem in relation to research. That is research which will result in better utilization of gas and disposition of combustion products, and perhaps make possible the building of entirely new appliances for domestic use, as well as developing and bettering present appliances, so that the industry can compete successfully with other fuels and meet the demands of the millions of new customers who will some day be on the market for our product if we are wise in our planning.

Manpower Shortage

A. F. BRIDGE, vice president and general manager, Southern Counties Gas Co., Los Angeles, Calif., and president-elect, American Gas Association.

There is one subject which is giving the industry much concern and must be given an increasing amount of attention in the future — namely, the shortage of manpower and what we can do about it.

We are now definitely informed that able-bodied men will receive only temporary deferment pending training of replacements, even though both the industry and the individual occupation are deemed essential. Selective service takes the position that if men can be trained for highly technical military assignments within a few months, industry can do the same.

I believe this situation can be adequately met if we view it realistically, appraise our manpower, decide what occupations are indispensable and proceed promptly to hire and train women and over-age men replacements. In making such a survey we must answer two fundamental questions—Will the man be drafted; and Can we get along without filling his job.

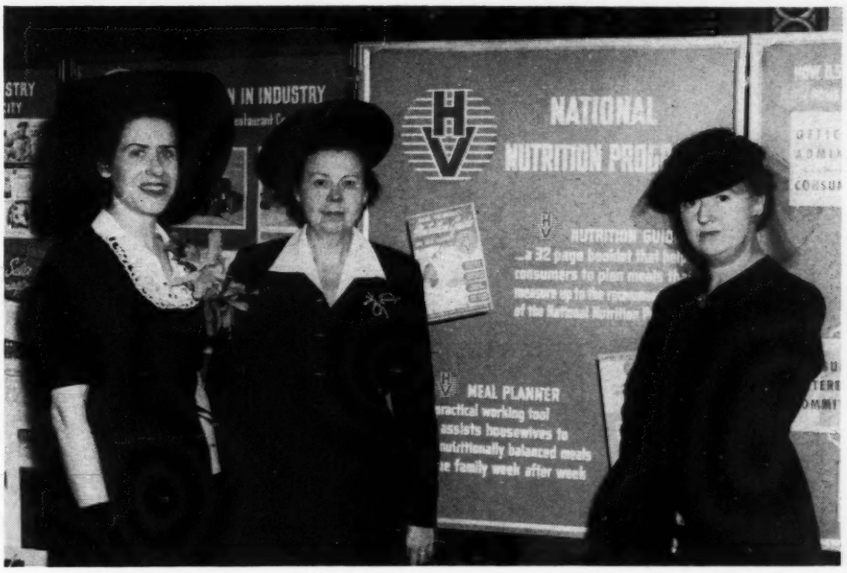
Though service curtailment appears as the logical first step, it isn't sound practice to suddenly lop off a wide variety of services and then attempt to fill the residual vacancies with an overnight recruiting program. That's why we need action now—so that the job

can be done gradually and carefully.

First emphasis should be placed on recruiting for two reasons: (1) increasing competition for these new types of labor; and (2) recruits should be trained while the experienced employees are still here to do that job.

Furthermore, as we carry on recruiting, we'll learn more about the availability and performance of new labor groups; we'll find out how efficient women can be in various capacities; and where we can fit in the elderly men. As the picture clarifies, we'll know just how far it is necessary to curtail our normal activities, and the reduction in service will be gradual, thus minimizing ill effects on public relations.

It appears that the sooner we get under way with a planned recruiting and training program, the more likely we are to avoid serious upsets later. Even though it means extra expense to retain and train groups of new people now, that practice will result in long-range economy.



Among speakers at Home Service Breakfast were, left to right: Miss Jeanette Campbell, Minneapolis, Minn., home service director, Minneapolis Gas Light Co.; Miss Jessie McQueen, New York City, home service counsellor, American Gas Association; and Miss J. Ernestine Becker, Baltimore, Md., nutritionist and adviser on Servel's Home Volunteer program.

The Gas Industry in War

ERNEST R. ACKER, president, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y., is also treasurer of the A. G. A. and chairman of its special committee on war activities.

Since the declaration of war it has been my privilege to act as chairman of the Association's Committee on War Activities and to work closely with the various sections and committees of the Association, and particularly with the headquarters staff in New York and Washington on many matters of importance to the industry and its war effort.

The Committee on War Activities is composed of only six members broadly representative of the natural and manufactured gas industries on a regional basis, and was so constituted to provide for quick decisions and prompt action in the present emergency. It is the successor to the Committee on National Defense so ably guided for two years or more by George F. Mitchell of Chicago and which was largely responsible for the excellent advance preparation of the gas industry for the actual requirements of wartime operations. The functions of the Committee on War Activities may be briefly summarized as follows:

1. To take action promptly in an emergency on matters originating with government war agencies, the Executive Board or members of the industry.

2. To promote the coordination of the war activities of the several sections and general committees of the Association.

3. To consider, authorize and sponsor any war activities which may be proposed by these groups and to initiate or assign to section committees any activities which the committee believes to be essential.

4. To make recommendations to the industry and to take the necessary steps to assure their full consideration by member companies.

Gas Conservation

E. HOLLEY POE, director of Natural Gas-Natural Gasoline Division, Office of Petroleum Coordinator for War, Washington, D. C.

Indications are that we have ample gas reserves, with few exceptions, strategically located to meet demands. Whether these reserves will be recovered for utilization depends entirely on how we conserve both oil and gas, how they are produced, and upon the constructive cooperation between the producers, the transporters, the distributors and the properly constituted regulatory authorities.

Conservation is the biggest word in this phase of supply segment of the war program. Likewise when we talk about the conservation of oil and gas we are talking about the life span of the oil and gas industry. When we deal with it we are dealing with the industrial future of the nation and with the health, comfort and future of our citizens.

Conservation of natural gas reserves and conservation in the production, transmission and utilization of natural gas must be faced positively by all of us. Sound policies must be encouraged and sound laws and their proper enforcement must be sincerely advocated. We must continue to support and encourage studies designed to develop efficient methods for the utilization of gas produced with oil if we are to avoid the wasteful blowing of gas to the air which has too often characterized this type of production in the past. Substantial progress along these lines has been made in the past and when the war program started we were on the threshold of even greater progress toward true conservation.

Research

F. W. SULLIVAN, JR., technical director, Institute of Gas Technology, Chicago, Ill.

The Institute of Gas Technology is now entering its second year with 10 new students selected from among the outstanding graduates of leading technical schools. These men are receiving fundamental instruction in physical and organic chemistry, gas analysis and geology. Over half of the working time of the student body will be devoted to laboratory work which, while of definite pedagogical value, will have a direct and immediate bearing on the winning of the war.

The research activities of the Institute have been concerned with the preparation of butadiene. Results of this work to date have recently been published. Investigations on adsorption are at present concerned with the production of active carbon for use in gas masks.

To summarize, almost all of the educational activities of the Institute are focused on an immediate "win the war" objective. It has been possible to incorporate this point of view without sacrifice of educational functions.

ASSOCIATIONS

OPC District Reports

J. FRENCH ROBINSON, president, East Ohio Gas Co., Cleveland, Ohio, is chairman of the natural gas section of the A. G. A. and chairman of OPC District No. 1.

The general problem of District No. 1 is, of course, the same as in all five of the districts. It is a problem of the greatest possible supply to meet a demand of natural gas which is unprecedented.

A recent study of the supply and demand of natural gas was made within District No. 1 and sent to the Office of Petroleum Coordinator. There it becomes at once the subject of a great deal of time and effort on the part of the central organization where the object will be to solve our problems if possible, both by factors within the district and by factors without the district, of which the system of central coordination furnishes both the knowledge and the means of utilizing that knowledge.

Through our committee in District No. 1 we have also been able to make a study and obtain valuable information on the amount of natural gasoline that is available in this district and where it is located, and this information, in turn, is cleared through the Office of Petroleum Coordinator which can, and does, divert this product to where it can best serve the war effort.

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BURT R. BAY, president, Northern Natural Gas Co., Omaha, Neb., and chairman of OPC District No. 2.

The Natural Gas and Natural Gasoline Committee for District No. 2 is endeavoring to serve in a capacity intended to be helpful to our industry and government alike in this war emergency.

Much of the effort of this committee, like that of the committees in other districts, has been planned for the purpose of providing governmental agencies with information of a kind that would be helpful in adapting the operations of our industry to the exigencies of war—more specifically, it has been directed to show present output and the possibilities of manufacturing greater quantities of butane and iso-butane and thus provide basic data of value in planning for the increased output of synthetic rubber and aviation gasoline, to make available a record of surplus compressor equipment, which might be put to use in the quick butadiene program, to furnish essential information covering any production area where relaxation of War Production Board Order M-68 appeared to be necessary to permit the orderly and economic development of adequate gas supplies and in general with respect to natural gas, to assemble facts pertaining to the developed and undeveloped reserves, pipe line transmission capacities, the demand imposed upon such capacity, both past and prospective, and pertinent information relating to the distribution and sale of natural gas. These data reflect the ability of individual companies to meet the increasing burdens imposed by war conditions and point out clearly any impending shortages of individual companies which require attention in the way of field development or additions to pipe line carrying capacity.

Advertising in Wartime

E. J. BOYER, sales manager, Minneapolis (Minn.) Gas Light Co. and Residential Section, American Gas Association, chairman.

In peace time, advertising plays an important part in our business. In war it is just as essential. A few trade names well known before the last war but whose makers discontinued advertising during the first World War are: Blue Bird, Star-Rite, Hoosier, Notox, Sellers, Seeger, Shinola, Bunte. Remember them? They stopped advertising and today they are practically out of business.

Advertising space should use that style of copy that will remind customers about the Conservation Program offering suggestions on saving fats, rubber, tin cans; promoting National Nutrition Program; Uncle Sam wants it to last; in fact, salvage everything for which there is no need in the home; and by all means urge everybody to buy War Bonds. By this kind of cooperation our customers will soon learn that the gas industry is doing its part in the war effort.

What about our competition? Are they lying by the wayside? Not at all! They come right out and tell us what they're going to do after this war is over. Here's a particularly good example of what they are doing. It reads:

"And her servants will all be electric, for electricity in modern electric appliances, for cooking, heating, cooling and cleaning, is just about the best servant man has ever had.

"Where is this fairyland? It's right here in America, tomorrow!"

Industrial Gas Advertising

J. P. LEINROTH, Public Service Electric & Gas Co., Newark, N. J.

Industrial and commercial advertising has been closely tied in with our defense and war program. As early as September, 1940, the character of our advertising, in so far as its copy theme for industrial markets was concerned, was changed to conform to the conditions brought about by our defense program.

The committee feels that this type of advertising accomplishes three very important results. It builds prestige for industrial gas—and for the whole gas industry. It sells the idea of industrial gas to non-customers, and thus points the way to speedier production, which in turn is a direct contribution to our national war effort. And it builds for the future of gas by developing a clear cut recognition of what gas can do for industry.

Appliances of the Future

JOHN A. ROBERTSHAW, president, Robertshaw Thermostat Co., Youngwood, Pa., and chairman, Manufacturers Section, American Gas Association.

The wartime development of plastics, glass and new metals introduces new basic materials which show every promise of being adaptable to gas appliance manufacture.

These materials offer opportunity for new design in stoves, water heaters and cooking appliances of all kinds. This can be so revolutionary in character as to make much of the present type appliances obsolete both as to construction and performance. Although gas appliance plants are now almost wholly converted to war work, there is vital necessity for the industry to continue research work and be alert to the far-reaching changes which are bound to be a post-war development.

Only by keeping abreast of rapidly changing times and conditions can the gas appliance industry maintain a position of leadership in the home appliance field.

A. G. A.'s Washington Office

GEORGE W. BEAN, Fuel Consultant, A. G. A.

The American Gas Association's Washington office served the industry by handling the following business during 1942:

1050 PD-1A applications.
387 letter applications under P-46.
45 project applications.
26 applications for exceptions under M-86
33 army camps and naval bases.
16 defense housing projects.
Approximately:
7422 pieces of correspondence.
5800 outgoing telephone calls.
Equally as many incoming.
1500 long distance incoming calls.

Gas Production

R. H. ARNDT, Consolidated Gas, Electric Light & Power Co. of Baltimore, Baltimore, Md., chairman.

The 1942 Joint Production and Chemical Conference held in New York on May 25 and 26, was the first Production and Chemical Conference meeting of the Association since the U. S. entrance into the war. The meeting was

streamlined in this account from the usual three-day conference to two days to conserve time. The interests of those in attendance at the conference followed naturally along the lines of the predominant war activities throughout the nation and indicated the influence and effect of the war on the gas industry. The High B. t. u. "Round Table" luncheon conference sponsored by the Gas Production Committee was an added feature of the spring meeting. The attendance and interest shown at this particular luncheon conference indicated the need for the separate group to accommodate the high B. t. u. gas company operators.

The outstanding developments in the high B. t. u. gas field are briefly:

1. Extended use of liquefied petroleum gases for standby purposes in natural gas territories. Five such plants have recently been put to use in the Pittsburgh district alone, and from all reports are giving satisfactory operation. The use of propane and pentane is becoming more popular due to shortage of butane for war activities.

2. The apparent success of liquefied methane in the Cleveland plant for peak loads and alleviation of distributing problems. The East Ohio Gas Co. has just recently announced that additional storage facilities for liquefied methane will be installed.

3. Use of butane in place of gas oil in making high B. t. u. gases as practiced in Lafayette, Ind.

4. General trend of increasing capacities and substitutions of generator fuels with present plant equipment to meet heavy wartime demands. All oil gas processes used in New Orleans, Denver and Memphis for standby and peak loads are now using an improved process with advantages of greater capacity, simplicity in operation, full 24-hour capacity, elimination of hot valves and smokeless operation.

5. Research work at Purdue University on the hydrogenation of coal to produce a 70% to 85% methane gas, which will be interchangeable with natural gas.

6. Repressuring of natural gas in old wells in some localities for peak load use with very good results.

Meters and Metering

J. H. COLLINS, New Orleans Public Service, Inc., New Orleans, La., chairman.

One of the primary objectives of the Meters and Metering Subcommittee for the year 1942 was the gathering, from as many representative companies as possible, information concerning all phases of the metering industry, and the correlation of this information into a brochure or booklet to be made available to the entire industry.

Questionnaires were answered and returned by approximately 53 companies representing all sections of the United States. Approximately 6,500,000 meters were represented by the 53 companies replying.

The information received from this questionnaire was correlated by the committee under the following headings: Change period practice; meter valves; packing; meter index glass frames and indexes; differential test; diaphragms; four-point or small consumption practice; meter set policy; practices affecting large iron and tin meters; meter performance information; meter repair shop practices; and conservation of material and labor in meter repair due to war conditions.

Volume Water Heating

GEBHARD C. BECK, The Brooklyn Union Gas Co., Brooklyn, N. Y., chairman.

The Volume Water Heating Committee undertook the following activities:

1. Preparation of material on specific subjects relating to water heating and sanitation to be distributed either through magazines, letters or discussions at conferences.

2. Plan for presenting story of gas water heating to American Public Health Association Conference to be held in St. Louis, Mo.

3. Communicate with proper governmental officials to offer data on water heating applications.

Gas Air Conditioning

L. OURUSOFF, Washington Gas Light Co., Washington, D. C., chairman.

Presented herewith is a summary of activities, accomplishments and recommendations of the committee covering the Association year of 1942.

Purpose:

1. Development of apparatus: residential, commercial, industrial.

2. Systematic field observation, testing and analysis of operating data.

3. Development of promotional methods.

4. Investigation of present and future applications and markets.

5. Utility and manufacturer coordination and collaboration in attainment of gas summer air conditioning load.

Conclusions and Recommendations. Many vital applications to the war effort have been made this year. The acceptance of gas dehydration in the industrial field is now definite and appears to be permanent.

Residential equipment has fully reached the point of economical and practical application. Hundreds of installations are in satisfactory service this summer from New England to Southern California. Research and development continue subject to restrictions imposed by the war.

Several successful commercial installations have been made and the expansion in that field is promising for natural gas territories.

Distribution

C. S. GOLDSMITH, The Brooklyn Union Gas Co., Brooklyn, N. Y., chairman.

The Distribution Committee wishes to report that it has actively cooperated again this year in the problems arising from the present emergency, and has offered its services and assistance to the Technical Section's Committee on War Activities through the chairman and vice chairman of the Distribution Committee, who have held themselves available for conferences which involved distribution considerations, especially in connection with the Association's book, "War Protection of the Gas Industry," in which work the Technical Section cooperated to the fullest extent.

Food Service Equipment

HARRY M. WOOLMAN, JR., Jersey Central Power & Light Co., Asbury Park, N. J., chairman.

Recommendations for 1943: The Food Service Equipment Committee has carefully checked the activities of competitive manufacturers and others in this field and it is quite evident that following the war, severe competitive conditions will have to be met. It is therefore recommended that the 1943 committee particularly direct its efforts toward:

1. Further studies of the post-war competitive situation.
2. Determining practical methods for collecting field data in the various divisions of food service.
3. Maintaining close contacts with manufacturers and with dealers' organizations.
4. Production of publicity in this field.

A subcommittee on servicing gas food service equipment was formed, with Charles C. Hanthorn, The Philadelphia Gas Works Co., Philadelphia, Pa., as chairman. This subcommittee selected a representative list of cities and analyzed the policies now being followed by the gas companies in rendering service to food service customers. It is believed that a study of the results of this survey will be of value to all gas companies in formulating servicing policies during the war.

Metal Treating and Melting

ROBERT C. LeMAY, The Connecticut Light & Power Co., Waterbury, Conn., chairman.

During the year the Metal Treating and Melting Committee completed two formal projects. The first of these was a study of the effect of city gas atmospheres in non-ferrous heat treating, with particular emphasis on aluminum

and its alloys. Under this project, a subcommittee headed by G. George Segler gathered and tabulated all available aluminum and aluminum alloy heat treating specifications, including Army, Navy, Federal and British specifications. This is published as a separate pamphlet entitled "Heat Treatment of Aluminum and Magnesium and Their Alloys."

The second project was the collection of material for, and the presentation of the paper previously mentioned, entitled "Maintaining Quality Standards in Wartime Industrial Gas Equipment Purchases." Copies can be secured from A. G. A. Headquarters.

Chemical

R. J. SHERIDAN, The Brooklyn Union Gas Co., Brooklyn, N. Y., chairman.

The following subcommittees existed or were originated to execute the details of the various jobs decided upon by the committee as a whole:

Analyses and Tests: Improved methods and new tests of interest to the gas industry were investigated.

Meters: L. M. Van der Pyl, Pittsburgh, Pa., continued with his one-man research on materials used for the construction of meters.

New Developments: V. J. Altieri, Everett, Mass., circularized outstanding members of the industry requesting information and ideas on topics of a chemical nature concerning the production, distribution, and utilization of gas. A comprehensive summary of the material then collected was distributed at the spring conference.

Revision of "Fuel-Flue Gases" Book: Louis Shnidman, Rochester, N. Y., remained as chairman of this group, which is looking forward to the issuance a few years hence of an edition of this successful publication enlarged and up-to-date.

Revision of Gas Chemists' Handbook: A rather large subcommittee, headed by E. L. Sweeney, Everett, Mass., was created to coordinate the efforts under way since 1937 to revise the handbook.

Safety: Under the chairmanship of Dr. T. A. Mighill of Pawtucket, R. I., has unearthed a large number of specific instances of hazards that exist in every chemical laboratory, frequently unrecognized.

Gas Conditioning

H. D. LEHMAN, The Philadelphia Gas Works Co., Philadelphia, Pa., chairman.

From its inception, the Gas Conditioning Committee has had under consideration, either from the standpoint of fact-finding or from that of seeking possible corrective measures, three major subjects. To a greater or less degree, these three subjects have been continuously under consideration and, during the past year, were further worked upon. Since, in the nature of the subjects, no final report can be given until corrective steps have been established and made effective, the report of the Gas Conditioning Committee must be a progress report.

1. *Organic Sulphur:* During the current year the Association appropriated $2000 to make possible a beginning of work looking toward the solution of the organic sulphur problem in the years that follow.

2. *The Problem of Maintaining Continuity of Pilot and Other Small Flows,* particularly as affected by vapor phase gum formation in manufactured gas. At present, the A. G. A. Laboratories in Cleveland are working on this subject.

3. *The Dust Problem in Natural Gas:* Recently Guy Corfield, research engineer of the Southern California Gas Co., Los Angeles, has agreed to accept the chairmanship of a permanent subcommittee to consider dust problems.

Publicity Regarding Changes In Meter Reading Plans

OHMER ULLERY, The Ohio Fuel Gas Co., Columbus, Ohio, chairman.

With various changes in meter reading procedure going into effect today to meet both the conservation of tires, automobiles and man power, it was believed good that a bulletin be prepared to show the publicity given these changes, insofar as the customer is concerned.

It was found in this study that most companies have given direct individual treatment to the customer, rather than the use of newspapers for this purpose. This can be attributed to the plans going into effect on a somewhat piecemeal basis and in all cases only covering a certain section of the customers, whereas newspaper advertising generally would reach customers not affected by the change. Where changes are general newspaper media is used.

Gas Engine Power Census

G. R. WALTON, United Gas Pipe Line Co., Houston, Texas, chairman.

The 1942 Gas Engine Power Committee of the Industrial and Commercial Gas Section of the A. G. A. decided to restrict its activities for this year to the compilation of the Annual A. G. A. Gas Engine Power Census—a study of the gas engine load served by the natural gas companies.

With 49 natural gas companies reporting, at the beginning of 1942 there were 4452 gas engine accounts as against 4234 for 1941, an increase of 5.1%. The number of engines in operation rose 5.2% from 7905 at the beginning of 1941 to 8316 at the beginning of 1942. Total horsepower increased 42,567 or 8.6%, from 495,726 to 538,293. It is interesting to note that the average horsepower per engine has risen 3.2%. Annual average gas sales per gas engine account were 3032 M c. f. The total annual revenue reported at the beginning of 1942 was nearly $2,795,310, or an average of 3.8% per account.

Operation of Public Utility Motor Vehicles

JEAN Y. RAY, Virginia Electric & Power Co., Richmond, Va., chairman.

With the public utilities fairly well represented in the new Office of Defense Transportation set-up, it was decided to devote the efforts of the A.G.A. Motor Vehicle Committee toward keeping the Association headquarters informed as to contemplated rules and regulations covering operations and maintenance of automotive equipment and the various rationing regulations that affect fleet operations. The committee has also undertaken the job of presenting the problems faced by the utilities in all discussions at staff meetings to the ODT.

In following this line of activity we have accomplished several things. We have been able to keep the Association headquarters informed as to coming rules, orders and regulations several weeks before they were actually issued. We have been able to obtain modifications of the tire rationing regulations that resulted in interpretations that were more favorable to the utilities, thanks to the efforts of F. A. Heinlein and E. W. Jahn, and we feel that we have been able to place the utilities in a position where the ODT considers its fleet operations on a par with those of the common carrier.

Within the next three months additional restrictions will be placed on the operations of motor vehicles. However, the public utilities have been exempted from complying with the operation limiting orders now in effect and, although there will be a limitation order covering public utility fleet operations, judging from present indications it will not hamper essential operations in connection with construction maintenance and repair of company facilities and may ease the present restrictions placed on meter reading by the tire rationing regulations to permit readings to be made every three months. The general trend in ODT at present seems to be toward placing public utility fleets in the class of vehicles whose operation is considered absolutely essential to the war effort and therefore to be regulated only where absolutely necessary.

New England Gas Ass'n Discusses Wartime Problems

MEMBERS of the operating division of the New England Gas Association met to discuss wartime problems affecting their industry on Oct. 7 in the University Club, Boston, Mass.

A demonstration in miniature of incendiary fire fighting in gas plants was supervised by J. L. Risinger, safety supervisor, Socony-Vacuum Oil Co., Inc., New York, and gave the members much helpful data on actual conditions which may arise in gas plants subjected to aerial bombardments.

During the afternoon session, discussion conferences were held by the meter group, chairmaned by A. C. Bateman and W. H. Parmiter; and the distribution and utilization group of which J. R. Beccia and William Laverty are chairmen. The production group, with S. C. McLaughlin and T. F. Papen as discussion leaders, covered a wide range of topics in an afternoon gathering.

At the evening session an interim report from the informal fuel committee was given by Hall M. Henry of NEGEA Service Corp., Cambridge, Mass. Bernard D. Connor, superintendent of transportation, Boston Consolidated Gas Co., Boston, Mass., spoke on wartime operation of a public utility automobile fleet; and Warren Churchill, chief chemist, Boston Consolidated Gas Co., gave a paper on the electric gas treater for removing nitric oxide from city gas. Climaxing the meeting was the paper prepared by Val Forgett, technical consultant in New York, and presented by Walter A. Ovaska, supervisor, applied engineering department, New England district.

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Chemical Exposition to Feature Wartime Displays

Devoting special attention to the importance of the industry in the effective prosecution of the war, the National Chemical Exposition will be held Nov. 24-29 in the Hotel Sherman at Chicago.

An outstanding feature will be an exhibit by the Industrial Salvage Section, Conservation Division of the War Production Board, to further its campaign to salvage approximately 100,000,000 lbs. of essential chemicals. War-time interest in the exposition will be further emphasized by special exhibits revealing what has been accomplished in providing substitutes and alternates for critical materials in which there is a shortage. A display of this type is being prepared by Dr. Harrison E. Howe.

A display of "New Chemicals" by W. J. Murphy is designed to aid chemists in solving emergency war-time problems.

Oklahoma Gas Utilities Hold Meeting

By O. D. HALL

WARTIME problems connected with rubber shortages, priorities, servicing appliances, training foremen and other new employees, occupied much of the attention of the 1942 annual meeting of the Gas Division, Oklahoma Utilities Association, held at the Biltmore Hotel, Oklahoma City, Okla., Sept. 24.

Outstanding accomplishments of the natural gas industry in making greatly increased deliveries of gas to war plants, camps, airbases and other fields, without requiring the use of any substantial amount of critical materials were set out in a paper by John H. Warden, general sales manager, Oklahoma Natural Gas Co., Tulsa, Okla., on the subject, "Benefits of Natural Gas to Oklahoma's War Efforts."

Half an hour of general discussion followed an informal talk by Warren J. Collins, attorney, Lone Star Gas Co., Dallas, Texas, relating to priorities and limitations orders as they affect natural gas utilities. He reviewed and presented interpretations of several of the 41 rules and regulations issued by the WPB and other federal agencies, and advised compliance with the spirit as well as the letter of such provisions, most of which are designed to save critical materials.

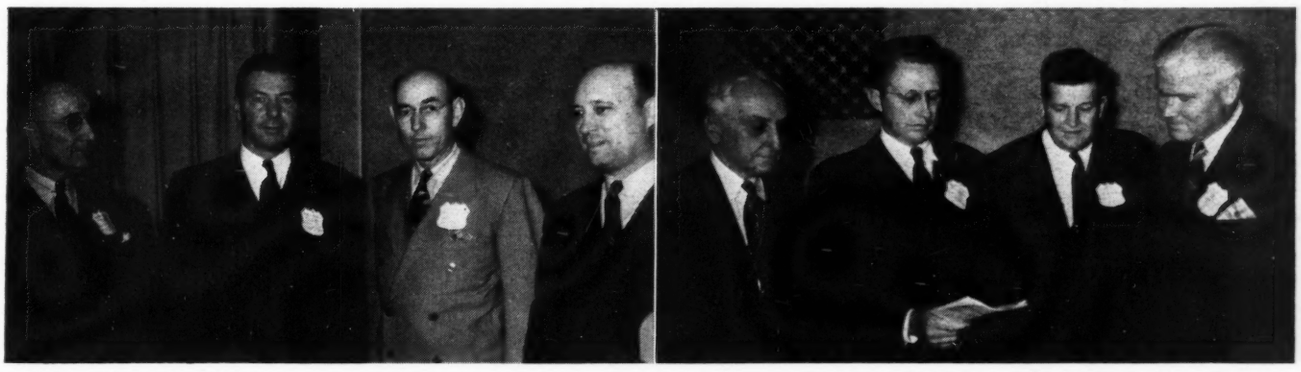
C. S. Worley, engineer and purchasing agent, Consolidated Gas Utilities Corp., Oklahoma City, Okla., reported that by retiring some of their company cars, reducing speeds, sharing rides, planning and consolidating service calls, substituting bicycles for lighter work, and utilizing public transportation facilities for longer trips, Oklahoma gas and electric utilities have reduced car mileage, in some cases 45%.

The Gas Service Co., of Kansas City, Mo., through systematic advertising and making service calls at homes, is securing better cooperation from its customers in civil defense activities and in household appliance conservation, reported F. M. Rosenkrans, new business manager of that company. As appliance dealers are compelled to suspend business in some communities, it will become the duty of public utilities to assume the responsibility of maintaining and repairing appliances and equipment, Mr. Rosenkrans said.

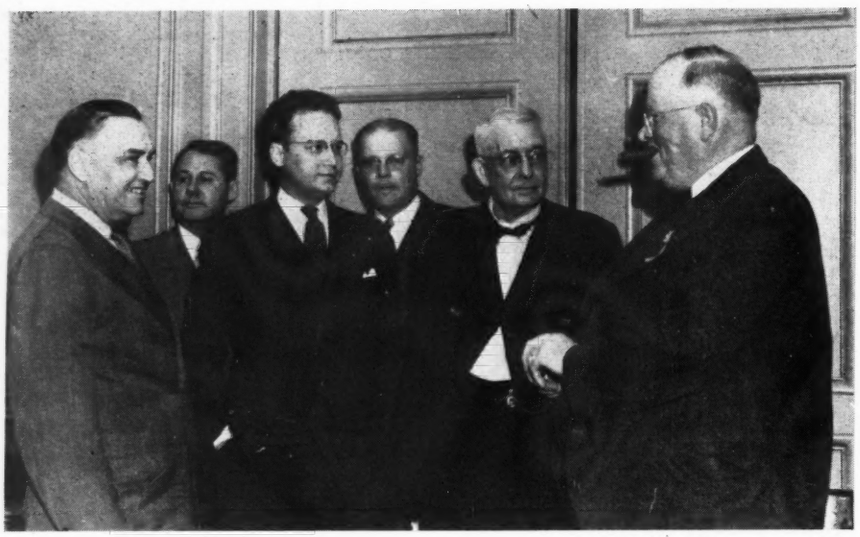
R. B. McHenry, director of vocational training, Tulsa (Okla.) school system, discussed and demonstrated best methods of "Teaching Leadership to Foremen." He pointed out that, with a turnover of as high as 50% in foremen of some industries, the proper training of new foremen has become of paramount importance.

Problems in "Orientation of New Employees" were outlined by Clifford W. Mann, superintendent, Zenith Gas System, Inc., Alva, Okla. Any successful program must provide instruction at various levels of employment with explanations of company policies and the reasons for all rules and regulations, Mr. Mann declared.

Gilbert Estill, superintendent, Oklahoma Natural Gas Co., Tulsa, Okla., chairman of the Gas Division, presided at morning and afternoon sessions. W. L. Woodward, president, Zenith Gas System and president Oklahoma Utilities Association, presided at the noonday luncheon. Judge Reford Bond, chairman of the Oklahoma Corporation Commission, was the speaker. Lauren Clegg, Consolidated Gas Utilities Corp., furnished a musical entertainment number from Radio Station WKY, Oklahoma City.



At the Gas Division meeting of the Oklahoma Utilities Association: LEFT: C. S. Worley, Consolidated Gas Utilities Corp.; F. M. Rosenkrans, Gas Service Co.; W. L. Woodward, Zenith Gas System; and A. F. Potter, Gas Service Co. RIGHT: Reford Bond, chairman, Oklahoma Corporation Commission; Gilbert Estill, chairman, Gas Division, Oklahoma Utilities Association; E. C. Joullian, second vice president, O. U. A.; and Warren J. Collins, Lone Star Gas Co.



Attendants at the Interstate Oil Compact Commission meeting in Chicago last month were (left to right): Commission Representatives Hiram M. Dow (New Mexico); B. A. Hardey (Louisiana); Governor Payne Ratner of Kansas; Representative Warwick Downing (Colorado); and Governor Leon Phillips of Oklahoma, chairman of the commission.

Oil Compact Commission's Meeting

ATTENDED by several governors and a galaxy of oil and gas industry leaders, the Interstate Oil Compact Commission met in Chicago on Oct. 2 to discuss problems relative to the 12 oil producing states represented.

When Governor Payne Ratner of Kansas replied to the welcome address by Governor Dwight H. Green of Illinois he said, "America will not and cannot go on tolerating the confused handling of production, inflation, raitoning and other vital problems. One agency undertakes to regulate oil according to its plan, another something else, while a third adds to the confusion, resulting in the oil industry being denied sufficient materials for developing new reserves and for carrying on with highest efficiency in established oil areas."

N. C. McGowen, president, United Gas Pipe Line Co., Shreveport, in addressing the commission urged an increase in extension of natural gas lines, but warned that they "must not be on the business-as-usual basis."

Harold L. Ickes, petroleum coordinator for war, prefaced his remarks to the oil men by expressing his thanks to them for the fine spirit in which they have cooperated with his department in spite of monetary losses to the industry.

Other speakers to address the convention included Ralph E. Davis, consulting engineer, Pittsburgh, whose paper outlined "A Survey of Present and Potential Gas Reserves"; Frederick W. Sullivan, director of technical research, Institute of Gas Technology, Chicago, who spoke on "The Institute of Gas Technology—A New Tool for the Industry"; Dr. Frank Dotterweich, office petroleum coordinator for war; G. L. Brennan, manager liquefied petroleum gas division, Warren Petroleum Co., Tulsa, Okla., whose address stressed "The Development of the Liquefied Petroleum Gas Industry"; and Dr. Gustav Egloff, director of research, Universal Oil Products Co., Chicago, Ill.

Vice President C. U. Daniels and President Joseph Bowes of Oklahoma Natural Gas Co., Tulsa, talk over matters at the meeting of the Interstate Oil Compact Commission in Chicago last month.

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Gas Appliance Booklet

"How to Get the Most From Your Gas Service" is the name of the handy new booklet prepared by the Illinois Northern Utilities Co., Dixon, Ill. The booklet covers all gas subjects of interest to the customers from how to get the gas turned on or off to the care of modern gas appliances.

Ickes, Davies and Eastman Address API Annual Meeting

PETROLEUM Coordinator Harold L. Ickes, Deputy Coordinator Ralph K. Davies and Defense Transportation Director Joseph B. Eastman are among the speakers at the 23rd Annual Meeting of the American Petroleum Institute being held at the Palmer House, Chicago, Nov. 9 to 12.

"This is in all respects a war convention of the petroleum industry," William R. Boyd, Jr., Institute president, said. "The industry is hearing and discussing, both in the general sessions and in the technical group sessions, just what the government has been doing and what it intends to do that affects the oil business. The wartime difficulties of the industry —the disruptions of normal transportation, the far-reaching cost and supply problems brought about by the impact of the war, the lack of necessary materials, and above all the accelerating demands for war products from petroleum—bring technological problems that make it more important than ever to assemble the oil industry's workers for analysis of common difficulties."

Mr. Boyd, reporting as president of the Institute and as chairman of the Petroleum Industry War Council, and Mr. Ickes are addressing the first general session of the meeting on Nov. 11. Mr. Davies and his assistants and divisional directors will speak at a session on Nov. 12, and Mr. Eastman and other prominent government officials concerned with oil industry problems will be heard at a special session on the evening of Nov. 11.

Nine group sessions have been scheduled for the meeting, to discuss the protection of petroleum facilities, war-time automotive transportation, pipe line transportation, synthetic rubber raw materials from petroleum and the refinery conversion program, hydrocarbon properties and research, and government problems in controlling drilling and production. Only about 40 committee meetings, whose work is contributing directly to the war effort, are being held.

■ ■

Gas Flow Study Will Feature November SCMA Meeting

The Nov. 19 meeting of the Southern California Meter Association will feature a paper, "Method of Computing Gas Flow in Pipe Lines Using Reynolds Number," by J. B. Reddick of the technical supervisors staff, Southern California Gas Co., Los Angeles. The meeting will be held at the Rio Hondo Country Club, with dinner being at 6:45 p.m. The program will be completed by a sound and color motion picture, "Pipe Line," which is to be offered by K. C. Smith of the Texas Co.

Speakers at the Association's October meeting were W. M. Henderson, superintendent of distribution, Southern California Gas Co., who outlined the steps taken by his company as defense against air raids, and Virgil E. Schultz, branch manager, Foxboro Co., who discussed automatic controllers.

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Annual Meeting Scheduled For Nov. 13 in Raleigh

President Ralph H. Fry has announced the annual meeting of the Mid-Southeastern Gas Association will be held Nov. 13 in Raleigh, N. C.

Officers and directors will gather for a dinner meeting on Nov. 12, and the general Association meeting will commence at 10 a. m., Nov. 13, followed by a banquet at 7:30.

Program arrangements are in charge of A. E. Jones, E. J. Meade and L. A. Scott.

FPC Approves Sale of Gas From Texas to Mexico

THE Federal Power Commission on Oct. 16 announced its order authorizing the Border Pipe Line Co., Houston, Texas, and the American Smelting and Refining Co., New York City, to export natural gas produced in the San Salvador field in Hidalgo County, Texas, for use by the American company in its zinc smelter at Rosita, State of Coahuila, Mexico. Applications were filed with the Commission by the Border company on Feb. 2, 1942, and by the American company on Sept. 14.

According to the Border company's application, the American company's requirements for zinc production are estimated to be 10,000,000 cu. ft. of gas per day which would be sold, under a contract between the two parties, at the rate of 5¢ per M c. f. for gas having a heating value of 1000 B. t. u. per cu. ft. The application also stated that gas manufactured from coal and coke is being used in furnaces at the Rosita smelter, and that the natural gas proposed to be exported will increase zinc production at the smelter from approximately 2400 to 4800 tons per year, as well as release approximately 4000 tons of coke per month for steel production in Monterrey, Mexico. If this coke production had not been released to the Monterrey Steel Co. it would be necessary to construct coke ovens requiring a two-year construction period, as there is no other source in the Republic of Mexico from which coke can be obtained to meet increased steel production at Monterrey.

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Gas Storage Commenced At Playa del Rey Field

The 12-in. pipe line connecting the Southern California Gas Co.'s 26-in. West Los Angeles-Slauson Station line with the Playa del Rey field was completed on Oct. 12, and actual underground storage of natural gas in the exhausted oil field has commenced.

The volume of gas being injected daily amounts to about 4 million cu. ft. at a line pressure of 150 lbs., according to Superintendent H. P. George of the Southern California Gas Co., Los Angeles, Calif.

Only the pressure on the 26-in. line is being used at present but the company is preparing to erect a compressor plant at the field which will increase the rate of injection considerably. The compressor station will contain eight 200-hp. Cooper-Bessemer units which were formerly in service at the Mountain View plant of the Pacific Lighting Co. They are two-stage units, the first stage compressing the gas to 450 lbs. and the second stage to a maximum of 1500 lbs. Fluor Corp., Los Angeles, will construct the plant.

When the plant goes into complete operation it is expected that injection will proceed at a maximum rate of 25 million cu. ft. daily. Under 1000 lbs. injection pressure, it is estimated that the underground basin will store about 3 billion cu. ft. of gas.

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CNGA Fall Meeting Held In Los Angeles Nov. 6

Streamlined to an afternoon session at which three important papers were presented and an evening session which included the association's annual banquet and entertainment program, the 17th Annual Fall Technical Meeting of California Natural Gasoline Association was held in the Biltmore Hotel, Los Angeles, Nov. 6, with W. W. Robinson, president, in charge.

The first speaker at the session was Wright W. Gary, president, Filtrol Corp., and recently director of the Refining Division of the Office of Petroleum Coordinator, whose topic was "The Role of the Natural Gasoline Industry in the Nation's War Effort." The second paper titled "Steel Allocation Problems in the Oil Industry" was given by Alexander Macdonald, deputy regional director, WPB.

The final paper of the meeting was presented by Dr. Hooper Linford, research chemist, Union Oil Co. of California, whose subject was "Chemical Utilization of Natural Gas and Natural Gasoline Hydrocarbons."

D. E. McFaddin and Ben C. Dumm were chairmen, respectively, of the fall meeting and entertainment committees.

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Lone Star Creates New Personnel Department

The creation of a personnel department for Lone Star Gas System has been announced by President D. A. Hulcy of Lone Star Gas Co., Dallas, Texas. As director of the new department, Willard G. Wiegel will have direct charge of activities relating to the company's employee personnel.

W. G. Wiegel

Mr. Wiegel joined Lone Star Gas System in the capacity of public relations representative during the company's development program of 1928 when natural gas service was being extended to include the majority of cities and towns now served by Lone Star and its affiliates. In 1929 he was assigned to the company's advertising and public relations department as assistant to Will C. Grant, director. In 1935 Mr. Grant appointed him advertising manager in which capacity he has served until his present promotion.

Mr. Wiegel is a past president of the Dallas Advertising League, a recipient of its Most Valuable Member Award in 1937, and for the past six years has served as a member of the National Advertising Committee of A. G. A.

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Cooper-Bessemer Official's Bond Drive Nets $350,855

In a one-day War Bond drive, Stanley E. Johnson, assistant sales manager of The Cooper-Bessemer Corp., Mount Vernon, Ohio, succeeded in selling the citizens of Mount Vernon $350,855 in bond purchases and subscriptions on Sept. 29.

Mr. Johnson was assisted in his tremendously successful campaign by the local officials and civic leaders and his goal of $100,000 was realized in a few hours, the final results far surpassing his most optmistic hopes.

Cooper-Bessemer, of which Mr. Johnson has been an employee for 23 years, is now manufacturing engines for the United States Navy and the Maritime Commission and has received the Treasury's Minute Man Flag for subscribing 10% of its payroll for War Bonds.

■ ■

American Stove Completes Conversion to War Work

The complete facilities of the American Stove Co., St. Louis, Mo., are now turned over to war production. When the last stove came off the company's line in late July, Arthur Stockstrom, president, announced that "the duration conversion" was completed.

New buildings have been erected and new machinery installed to handle the manufacture of the war instruments which include thousands of airplane flares.

U. G. I. Questions SEC "Death Sentence" Powers

CONTENDING that the Public Utility Holding Company Act of 1935 vested "improper" legislative power in the Securities and Exchange Commission, the United Gas Improvement Co., Philadelphia, Pa., on Oct. 6 appealed to the U. S. Circuit Court of Appeals for reversal of the SEC's two demands upon the company.

Under the "death sentence" clause of the Holding Act, SEC has ordered U. G. I. to divest itself of holdings in 21 subsidiary or affiliated companies scattered throughout the Middle Atlantic, New England, Southern and Midwestern states.

Thomas B. K. Ringe and William C. Mason, U. G. I. counsels, told the court that the SEC orders would serve to disintegrate the company rather than bring about a single integrate system. They argued that SEC is functioning contrary to the provisions of the act in ordering utility corporations to divest themselves of holdings before determining what the system should consist of.

In retaliation Homer Kirpke, assistant SEC attorney, said that U. G. I. has acknowledged that the companies involved in the divestment orders are not necessary. Mr. Kirpke also stated that the holding company law does not confiscate any property but rather limits the properties to be held.

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Completion of Bayou Pipe Line Set for December

Construction of the Bayou Pipe Line System, part of the comprehensive pipe line program to increase oil deliveries to the East Coast, is well under way and should be completed some time in December, it was announced by Petroleum Coordinator for War Harold L. Ickes.

Deputy Petroleum Coordinator Ralph K. Davies said that the 250-mile second-hand line will have a capacity of 60,000 barrels a day and will carry petroleum products directly from Gulf Coast refineries to the Baton Rouge end of the Plantation Pipe Line.

Construction of the Bayou System and the northern extension fo the Plantation Line will (1) continue to provide the southeastern states with 60,000 barrels of petroleum products daily; and (2) bring 30,000 barrels daily to Richmond, Va., for trans-shipment by barge up Chesapeake Bay to more northern points.

Estimated cost of the line will be about $7,500,000, of which only $840,000 will be expended for new materials.

Construction, operation and maintenance of the Bayou System will be handled on a cost basis by Shell Pipe Line Corp.

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Rapid National Expansion of Home Volunteer Program

Activity of the Home Volunteer Program, instigated last April to assist American homemakers in their task of preparing food on "the home front," is fast gaining national recognition. Already it is serving 450 towns and cities and thus reaching a potential 11,000,000 gas users.

The work of the various committees in this program covers both conservation and nutrition angles, a scope so wide that in a number of cases the home service staffs of the gas companies have had to solicit local volunteer workers. In a number of cases the requests for gas company assistance in providing material and personal consultation service have been so numerous that many companies have increased their home service staffs.

NU-WAYS

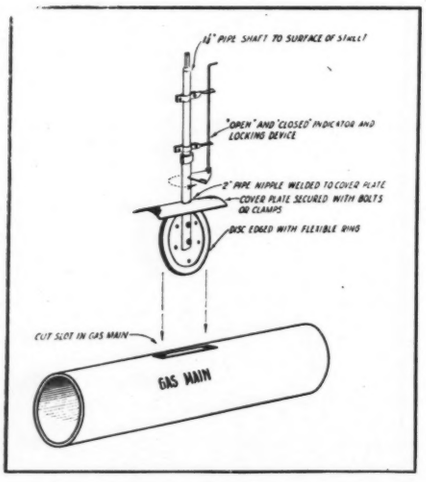
Butterfly Control Valve For Low Pressure Mains

Developed by C. P. de Jonge, gas distribution engineer, gas distribution department, San Diego Gas and Electric Co., San Diego, Calif.

Used as an emergency shut-off device for low pressure gas distribution mains from 4-in. to 30-in. diameter, some 40 butterfly control valves of a special design have been installed in San Diego and appear to be satisfactory.

The valve consists essentially of a disc which can be rotated inside the pipe on a vertical shaft similar to a stove-pipe damper. There is no socket or bearing in the bottom of the pipe. The bending moment in the vertical shaft is absorbed in a long housing on top of the gas main. This housing is welded to a cover plate which is secured to the main with bolts or clamps.

The disc is inserted through a longitudinal slot cut in the top of gas main, making it unnecessary to cut the pipe circumferentially or to sleeve in a special fitting. The valve can be closed or opened rapidly through a small valve box (12 in. in diameter) set in the pavement. The assembly can be installed without taking the main out of service.


½" PIPE SHAFT TO SURFACE OF STREET
"OPEN" AND "CLOSED" INDICATOR AND LOCKING DEVICE
2" PIPE NIPPLE WELDED TO COVER PLATE
COVER PLATE SECURED WITH BOLTS OR CLAMPS
DISC EDGED WITH FLEXIBLE RING
CUT SLOT IN GAS MAIN
GAS MAIN

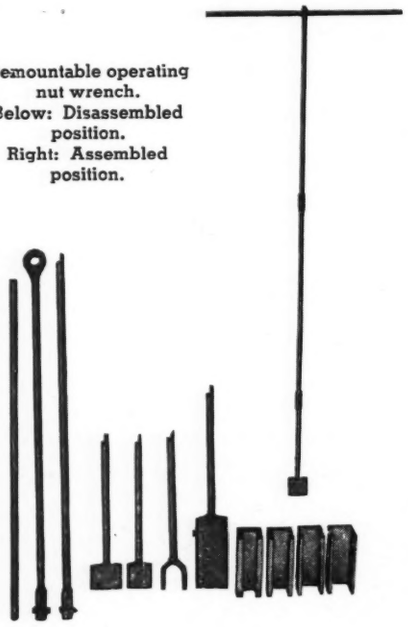
Material used was mainly pipe fittings and small pieces of steel plate assembled by welding. Machine work is limited to drill press work. There are alternate methods of facing the periphery of the disc to obtain a seal against the inside wall of the gas main. A plywood disc ringed with worn out garden hose was found to be very effective. Another method consists of a sheet of ¼-in. rubber between two metal discs.

■ ■

Demountable Nut Wrench

L. L. Biggs, supervisor of tools, and J. R. Brick, special clerk, Southern California Gas Co., Los Angeles, Calif.

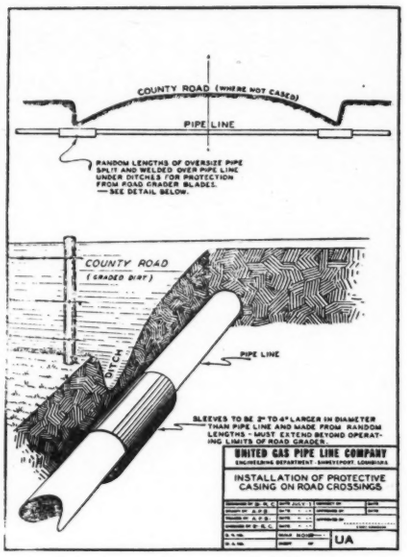
It is often necessary to have underground valves in our lines operated by supervisors, district foremen, or other employees who do not work from trucks. A wrench sufficiently long to reach from the street surface down through a valve casing to the operating nut attached to the valve stem is required. The conventional types of operating nut wrenches are too large to be readily carried in an ordinary automobile.



Demountable operating nut wrench. Below: Disassembled position. Right: Assembled position.

The demountable operating nut wrench breaks down into lengths each less than 3 ft. long; a size which may be easily carried in any auto.

Sufficient strength is provided by means of the locking joints. Sockets are provided for gate valve operating nuts to 6-in. as well as lubricated plug valves. A fork is also supplied for operating hand wheels.


COUNTY ROAD (WHERE NOT CASED)
PIPE LINE
RANDOM LENGTHS OF OVERSIZE PIPE SPLIT AND WELDED OVER PIPE LINE UNDER DITCHES FOR PROTECTION FROM ROAD GRADER BLADES. —SEE DETAIL BELOW.
COUNTY ROAD
(GRADED DIRT)
DITCH
PIPE LINE
SLEEVES TO BE 2" TO 4" LARGER IN DIAMETER THAN PIPE LINE AND MADE FROM RANDOM LENGTHS - MUST EXTEND BEYOND OPERATING LIMITS OF ROAD GRADER.
UNITED GAS PIPE LINE COMPANY
ENGINEERING DEPARTMENT SHREVEPORT, LOUISIANA
INSTALLATION OF PROTECTIVE CASING ON ROAD CROSSINGS
UA

New Type Road Casing

Developed by a United Gas Pipeline Co., Shreveport, La., repair crew headed by Tom Mussett.

United Gas Pipe Line Co. has long been experimenting with various methods of protecting minor road crossings from grading machinery and similar hazards. Rock riprap, pilings, concrete aprons and other devices have been tried and found wanting. It is not feasible to handle every road crossing in the way that main highways are bored and cased; it would take years of work, hundreds of miles of pipe, constant maintenance and frequent changes as new roads were made.

In the Monroe district recently, one crew tried a new type of "casing" to protect these road crossings. It looks like it is the most economical and effective type of protection yet devised.

Pipe with an inner diameter slightly larger than the outer diameter of the pipe which is to be protected is split diagonally in two pieces. The piece of pipe used is just slightly longer than the portion of the pipe line which is liable to be endangered by the grader or other hazards. These two sections are slipped around the line and welded together again. The casing, however, is not fastened to the line. The "slip cover" is coated on the outside and inside.

The crew enlisted the services of a county road grader and put such a casing to the test. Coming in with the blade low and at a high rate of speed for a grader, the driver struck the casing. The protective covering was pierced, but the initial shock of the blow rolled the casing slightly and the pipe line itself was not damaged. Several such tests were made and all were successful.

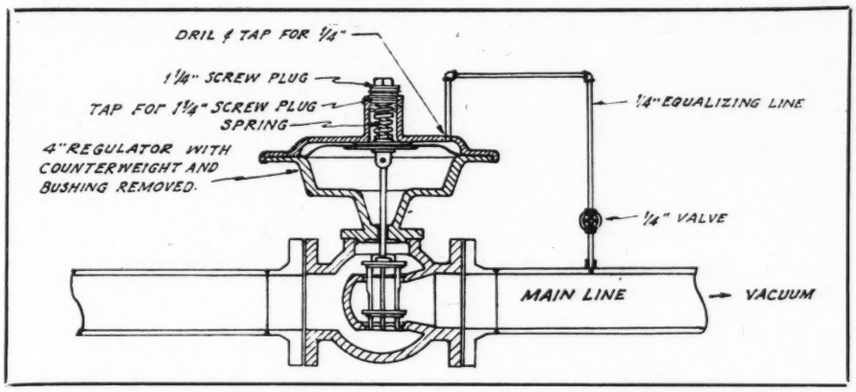


Diagram of volume control device installed on low pressure gathering system.

Volume Control for Low Pressure Gathering System

Presented by John P. Squire, Magnolia Petroleum Co., Dallas, Texas, before the Southwestern Gas Measurement Short Course, Norman, Okla., April 21-23, 1942.

Several leases are connected to a vacuum-booster station through a gathering line which carries about 3 in. mercury vacuum at the end of the line and about 12 in. mercury at the station. Due to a fluctuating gas flow at the wells, the load arriving at the booster had been very irregular, causing constant attention to the engines.

The vacuum on each lease was controlled with a lever-type regulator, the top of which is open to the atmosphere. The lease at the end of the system about 8 miles away (Lease "A") was used as make-up gas, since it was of the lowest gasoline content. When the gas on a lease near the station (Lease "B") would suddenly go off, decreasing the load at the station, it was necessary to go to the end of the gathering line and turn in more gas from Lease "A." Just as suddenly as it went off, the gas on Lease "B" would come on again, resulting in a sudden overload at the booster.

A 4-in. regulator was used to control the vacuum on Lease "A" to hold atmosphere on the wells. There was also a pop-valve to the atmosphere on the lease to take care of any pressuring of the wells.

To overcome this troublesome situation, the lever and rain-cap were removed from the regulator. The top opening of the upper diaphragm case was then tapped for a 1¼-in. pipe thread. A light coil spring was then inserted in the top opening and placed directly on top of the diaphragm. A 1¼-in. plug was then screwed in the top, depressing the spring to any tension desired. A ¼-in. line was then connected from the top diaphragm to the down-stream side of regulator and a few adjustments of the spring maintained satisfactory volume control.

When Lease "B" increases in volume the vacuum at the outlet of the regulator on Lease "A" begins to decrease, which in turn decreases the vacuum on the top diaphragm, the spring tending to close the valve and thus reducing the supply of gas from that lease. When the supply from Lease "B" decreases, the vacuum at the outlet of the regulator on Lease "A" begins to increase, which in turn increases the vacuum on top of the diaphragm and the pressure on the lower diaphragm tends to overcome the spring and open the regulator, thus automatically increasing the gas take from Lease "A."

The time and material required for this work was negligible and the worry of underload and overload at the booster station, as well as possible damage to equipment was eliminated.

Welding Sleeve

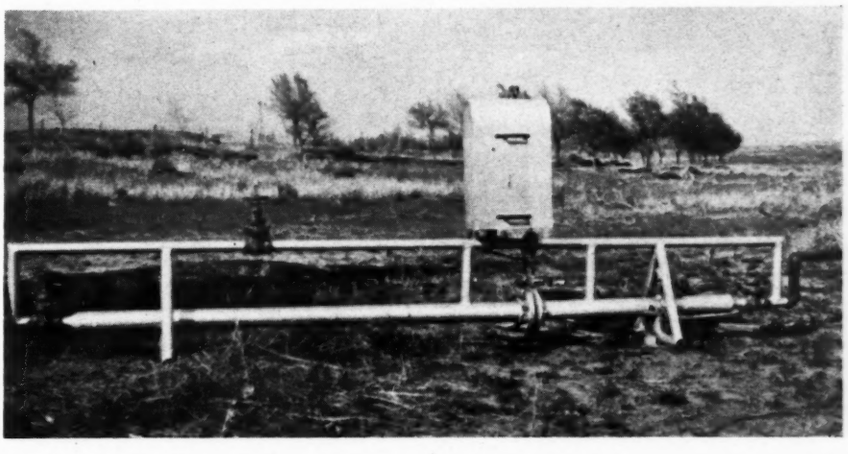
K. B. Anderson, Coast Counties Gas & Electric Co., Santa Cruz, Calif., excerpts from a report, "Wartime Curtailment and Revised Operating Practice," presented before the Spring Technical Conference, Pacific Coast Gas Association, Los Angeles, May 21-22. L. L. Biggs, supervisor of tools, and J. R. Brick, special clerk, Southern California Gas Co., Los Angeles, Calif.

Careful scrutiny of application of pressure control fittings has revealed situations where practice less extravagant in use of critical materials can be used with equal and in some cases improved efficiency. It has long been our policy to prohibit welding "against bags." That is, where a bag is the only barrier between a tieing in operation and the gas system pressure. One of our foremen developed a practice, new to us but perhaps used elsewhere, involving the use of a longitudinally split cylindrical sleeve lined with wet asbestos which is clamped around the butted ends of two pipes which are to be joined together. The sleeve is then completely welded to the pipes at the ends of the sleeve and along the longitudinal joint. After tacking, the clamp is removed. While this sleeve does not provide a perfect seal, it does eliminate the hazard of welding "against bags" and permits complicated tieing in operations to be performed under complete pressure control and with great saving in critical materials. This development will be retained after the war.

Portable Meter Run

J. L. Whipkey, Canadian River Gas Co., Channing, Texas. Submitted to the Southwestern Gas Measurement Short Course at Norman, Okla., April 21-23.

A few years ago we were faced with the problem of measuring gas with an orifice meter at various temporary stations and we wanted to obtain an accurate measurement at these points. In order to save labor costs and to have a setting that would stay level and be easy to transport from location to location, this portable meter setting was designed. It is made in two sections, the longest of which is 9 ft. so that it can be easily hauled on a pickup. The portable meter meets with A. G. A. Report No. 2 specifications and is 15 ft. over all. The estimated cost for a 4-in. meter run, 2-in. by-pass, and 2-in. valves and supports is $150.



Request Interpretation of Holding Company Act

COMMONWEALTH & SOUTHERN, Wilmington, Del., one of the largest American utility holding companies, on Oct. 23 asked the Third United States Circuit Court of Appeals for a new interpretation by Congress of the "death sentence" provision of the Holding Company Act. The Securities and Exchange Commission order of April 9 gave Commonwealth & Southern one year to recapitalize its preferred and common stock into a single class of common stock.

George Roberts, corporation counsel, said that continued interpretation of the act by the SEC "will result in the loss of tremendous values to the security holders of this country." He contended that SEC has no constitutional authority to alter the rights of Commonwealth stockholders without their participation in the proceedings. Mr. Roberts also questioned the ability of the commission to accurately determine what constitutes an "unduly or unnecessarily complicated structure" or "unfairly and inequitably distributed voting power," unless Congress sets up a yardstick to guide the commission.

■ ■

SEC Approves Columbia Oil Pipe Line Sale

Final settlement of the long fight between Columbia Oil and Gasoline Corp., subsidiary of Columbia Gas and Electric Corp., Wilmington, Del., and Missouri-Kansas Pipe Line Co., over control of the 75 million dollar Panhandle Eastern Pipe Line Co., Kansas City, Mo., was reached Oct. 3. The agreement came when the SEC approved transactions leading to Mokan's eventual control of the natural gas property.

Columbia Oil was granted one year to complete the voluntary sale of its 50.1% holdings ($10,436,826) of Panhandle common stock to Phillips Petroleum Co., Bartlesville, Okla., which in turn will sell half of that interest to Mokan, giving the Mokan concern 68% control. Columbia Oil stockholders have yet to approve the transaction.

The settlement provides for dissolution of the Columbia oil and therefore automatically cancels the "death sentence" action against that company under the Holding Company Act.

■ ■

Cities Service Gas Co. To Be Investigated by FPC

Cities Service Gas Co., Bartlesville, Okla., is to have its system and operations investigated by the Federal Power Commission at a public hearing in Kansas City, Mo., Nov. 30. The purpose of the hearing, which culminates an extensive three-year investigation, is to determine the reasonableness of the company's wholesale rates.

Cities Service Co. is authorized to do business in Texas, Oklahoma, Nebraska, Missouri and Kansas and has a transmission system of more than 4307 miles of main pipe lines.

■ ■

Helium Plant Expansion

With the war expanding the need for helium in all its many uses, the U. S. Bureau of Mines has announced its intention of stepping up production of the gas in the government-owned mines in Texas. Helium is stripped from natural gas in the Texas fields, which have an average of around 2% helium content, by a refrigerating process. The original capacity of the Texas helium plant was 24 MM c. f. annually.

Johnny Waters of the maintenance department of the Douglas Aircraft Co.'s Long Beach, Calif., plant is shown with the large heat plate and oven arrangement which saves 75% in time over old methods in preheating Kirksite dies before lead top dies are poured. This preheating is done to even the temperature of the molten lead which is poured to make the lead top of the die. Preheat saves warpage and makes for a smoother surface where the two metals contact, thus saving much grinding and polishing before airplant parts can be stamped. These dies are used in drop hammers to stamp out aluminum and steel parts. This suggestion won Mr. Waters the "A" award.

P.C.G.A. Advertising Teaches Consumers Appliance Care

IT'S about duration-izing your gas appliances . . .," captioned by those poignant words that will demand the attention of thousands of Pacific Coast homemakers, the Pacific Coast Gas Association has launched its new advertising campaign.

These attractive ads give specific directions on caring for gas appliances so generally used for the four big jobs.

The practical hints given by Mr. Gas Flame, spokesman of the ads, on caring for the kitchen range suggest that, since porcelain enamel surfaces are like glass, wipe them off every day . . . avoid the use of harsh cleaning elements . . . and don't place wet dishes on top of the range if you would duration-ize it. The interior of the range should be guarded with the same tender care you would lavish upon your finest aluminum in wartime, cautions Mr. Gas Flame.

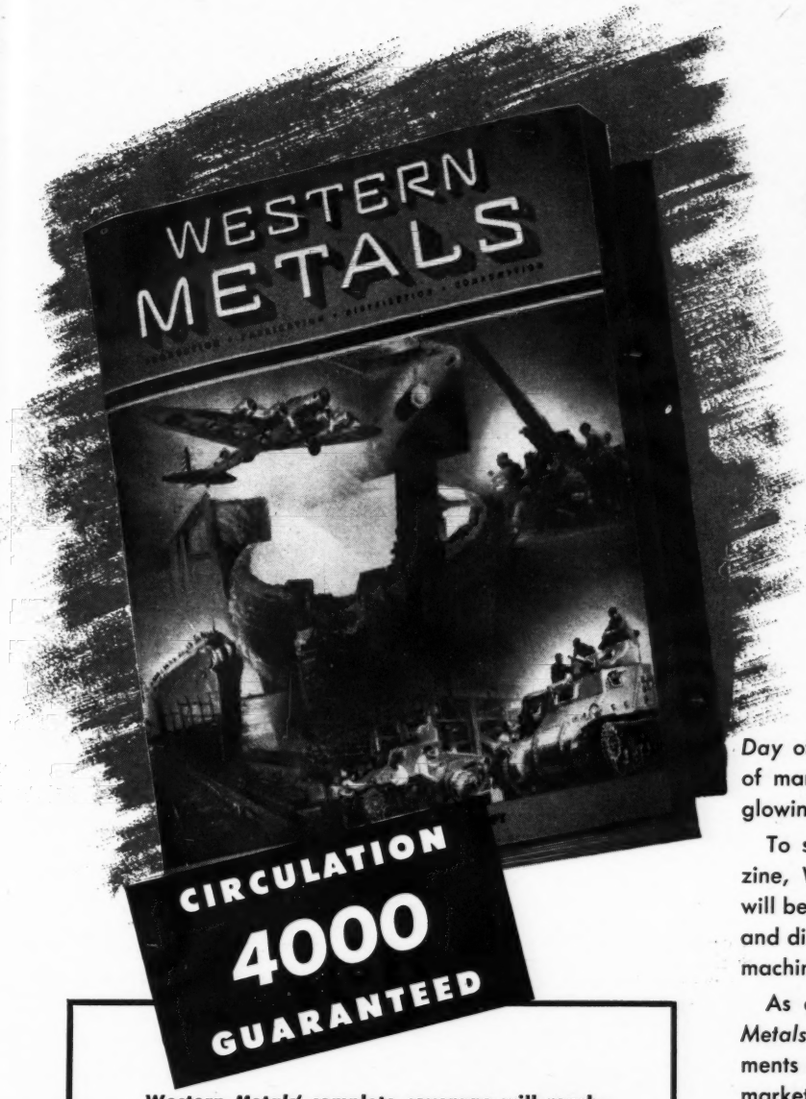
Other equally effective ads in the series offer words of wisdom on the home care of water heaters, furnaces and gas refrigerators, and pointedly tell the story of duration-izing equipment by inspection, adjustment, necessary cleaning and repair.

The ads, prepared by the Knollin Advertising Agency of San Francisco and Los Angeles, Calif., and already published in *Sunset Magazine, California Parent-Teacher, California Federation News, Parent-Teacher Journal* and *Parent-Teacher Courier*, warn Americans not to waste gas, for "Remember—Waste helps the enemy, conservation helps America."

■ ■

Arkansas Commission Rate Case Postponed

Postponement until further notice of a public hearing scheduled to begin Oct. 26 in Little Rock, Ark., was announced by the Federal Power Commission in its proceeding arising from a complaint filed by the Department of Public Utilities of the State of Arkansas asking the FPC to order reductions in the wholesale rates by which the Memphis Natural Gas Co. supplied natural gas to Arkansas Power and Light Co. for resale in McGehee, Dermott, Lake Village, Eudora and Wilmot, Ark. The Arkansas commission requested the postponement on Oct. 20.



It's news!

A monthly trade magazine to serve the West's ferrous and non-ferrous metal industries ... *producers, distributors, fabricators and consumers...*

Day of the West in metals is here! Rapid wartime growth of manufacturing, with huge population upsurge, point a glowing future for metal industries west of the Rockies.

To serve these growing industries, a new trade magazine, *Western Metals,* starts publication with January. It will be edited for a western audience of those who produce and distribute metals and those who produce and distribute machines and merchandise made of metals.

As an intelligent, constructive editorial voice, *Western Metals* will report news of achievements, technical developments and people in the metal industries . . . will help find markets to employ western production when the War is won . . . will gather information to offset competition of substitutes resulting from war's necessity.

CIRCULATION 4000 GUARANTEED

***Western Metals'* complete coverage will reach executives of metals industries in the eleven western states, Alaska, western Canada, Mexico.**

CONSUMERS AND FABRICATORS:
Airplane and Airplane Parts Manufacturers; Shipyards and other War Producers; Fabricators, plate and structural; Foundries, all types; Oil and Gas Companies; Electric Power and Water Utilities; Metal Goods Manufacturers; Machinery and Machine Parts Manufacturers; Oil Field Equipment Manufacturers; Forge Shops and Heat Treaters.

PRODUCERS:
Both ferrous and non-ferrous.

DISTRIBUTORS:
Warehouse Jobbers, Dealers, etc.

ALL OTHERS:
Metallurgists, Engineering Contractors, Government Offices, Libraries, Colleges, and Miscellaneous.

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DON PARTRIDGE, *Editor*
18 years Pacific Coast editor of magazine, STEEL

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ABSTRACTS

Current Periodicals

Drip Equipment for Natural Gas Transmission Lines—George Cash, assistant superintendent, Godfrey L. Cabot, Inc., Cabot Gas Corp. *The Oil and Gas Journal,* Sept. 24, 1942, p. 107. For a great many years in the past it has been the practice of the gas industry to make transmission line drip installations on the downstream side of sags. The pressure at which the line is to work, together with the quantity of gas to be handled, have controlled the position of the drip. The contour of the ground has also been a factor. It has very often been demonstrated that conditions of flow of gas in pipe lines do not remain fixed over a period of years. Flows may be very greatly diminished or they may be completely reversed. With such changes it becomes patent that drips installed as previously discussed will be in the wrong position under the new conditions.

Experience has led the writer to believe that during the construction of a pipe line the first drip to be installed in a sag should be installed with the low end of the drip not higher than the low point on the pipe line. In fact, it would be better if the drip straddled the sag.

Developments in Maintaining Compressor-Station Equipment—W. E. Nestor and G. H. McKay. *The Oil and Gas Journal,* Sept. 24, 1942, p. 123. Demands on manufacturers of gas-compressing equipment, steel pipe mills, foundries, etc., under war conditions are making it increasingly difficult to obtain replacement parts and other material necessary to maintain equipment and pipe lines in a high state of efficiency to meet the abnormal demands on natural gas systems to supply gas to the ever-increasing number of wartime industries as well as their regular domestic and industrial customers. Engineers of the compressor station department, realizing the difficulties arising from the scarcity of these critical metals, are making every effort to conserve their use in the making of repairs by substituting other metals where practical, or metalizing present parts made of bronze or brass heretofore discarded as worn out.

The Thermo-Siphon Heater for Oil Field Use—Harold Vance, head, Petroleum Engineering Dept., and Elmer G. Smith, professor physics, A. & M. College of Texas. *The Petroleum Engineer,* Sept., 1942, p. 27. The thermo-siphon, or gravity circulation, heating system has many applications in the production branch of the oil industry. Many heaters of this type are already in service, and with the present scarcity of steel it is possible for additional heaters to be constructed from available materials on many leases. This type heater is particularly applicable to heating dirty oil for the purpose of breaking down emulsions, either in the separator, gun barrel, or stock tanks. It consists essentially of a gravity circulation hot water system in which the source of heat may be some distance from the place where the heat is desired. This same principle is applied in hot water heating systems for dwellings.

Mathematical Correlation of the Paraffins—Paul Buthod, Lucile Rowell, Edward Stewart, Jr., and Prof. Walter S. Foster, University of Tulsa. *The Oil and Gas Journal,* Oct. 1, 1942, p. 38. Vapor pressures of the lighter hydrocarbons are extremely useful in engineering design work but most such data are presented in a graphical or tabular form. Curves are widely used, but it is difficult to obtain accurate readings from them. The tabular form, though more accurate, requires interpolation or even extrapolation in some instances. The purpose of this study is to prepare an empirical equation of vapor pressure versus temperature, by using the method of least squares. A correlation was made between the coefficients obtained in the empirical equations and the number of carbon atoms in the respective hydrocarbons.

Bottom-Hole Separator Conserves Reservoir Gas Pressure—Kork Kelley. *The Petroleum Engineer,* Sept., 1942, p. 31. The bottom-hole and gas separator herein described is intended to conserve the gas in the reservoir. It is not suitable, nor was it intended, for use on flowing wells. The purpose of the device is to trap the gas at the bottom of the hole before it can reach the working barrel of the pump, so that no free gas is produced with the oil, only that in solution with the oil. The gas is then controlled at the casinghead, as it can be produced through the casing or completely shut in. Gas lock in the pump is reduced or eliminated and cup wear is reduced to a minimum because of the decrease in agitation of sand particles. Use of the separator has also resulted in a decrease in paraffin trouble, as the gas pressure is maintained and is often accompanied by a temperature rise.

Pipe Line Program Includes Installation of Dehydration Plants—Frank H. Love, managing editor, *The Petroleum Engineer,* Sept., 1942, p. 46. Recently the Stearns-Roger Manufacturing Co. completed the installation for United Gas Pipe Co. of three dehydration plants as a part of a program that included the Lirette-Gibson-Mobile transmission system, which was completed by the company the early part of this year. These plants are designed to remove sufficient entrained liquid water and vapor from the gas to obtain a maximum water dewpoint depression of 55° F., which is necessary to prevent the formation of hydrates.

Diethylene glycol is used as the dehydrating liquid, and a closed externally heated system containing Dowtherm supplies heat for reconcentrating the glycol.

Servicing Recording Calorimeter Used to Determine Heating Value of Gas—Roland O. Cox, chief gas measurement engineer, Lone Star Gas Co. *The Petroleum Engineer,* Sept., 1942, p. 69. The heating value of gas as expressed in British thermal units is a measure of its true quality. A record of heating value is desirable on main sources of supply of pipe line companies and is sometimes mandatory in sales contracts with large industrial users. The C-H Thomas Recording Calorimeter is one of the most successful types for this purpose and is widely used throughout the gas industry.

The writer does not recall any published articles on experience in operation of this machine, probably because most users employ factory service men to test and repair them, and are therefore not thoroughly experienced in test and repair procedure. The Lone Star Gas Co. was among the first natural gas companies to use this calorimeter and has serviced, maintained and tested its own machines since the first one was purchased. This article is written to give others the benefit of the experience thus derived.

High-Pressure Gas Measurement, Part 1—Donald L. Katz, T. A. Matthews and C. H. Roland. *The Petroleum Engineer,* Sept., 1942, p. 82. The reliability of the compressibility factor method for gas density calculations has been investigated in the Phillips Petroleum Co. laboratories and a summary of this information was prepared in the summer of 1941. The first part of this article is essentially an abstract of this report covering the comparison of the experimental and calculated compressibility factors on eight natural gases, augmented by recent data from Texas A. & M. College on four natural gases. The use of the compressibility factor for computing the density of high-pressure natural gases containing small quantities of liquids is demonstrated.

Cathodic Protection of Tank Farms—R. A. Brannon, senior corrosion engineer, Humble Pipe Line Co. *The Petroleum Engineer,* Sept., 1942, p. 92. The principles involved in the cathodic protection of tank farms are identical with those involved in the protection of any other submerged or buried structure. Just as in the case of pipe lines and other structures, however, the application of these principles to different tank farms creates different problems. This article concerns the application of cathodic protection to a large tank farm in the Gulf Coast area of Texas.

Books and Reports

Directory of Electric Utilities in the United States — 1941 — Federal Power Commission. Includes an index to the Commission's Statistical Publication and information on each of 2855 publicly owned utilities and 1602 private owned utilities. The 1050-page book was compiled by the Commission in collaboration with the Work Projects Administration from data furnished by the utilities. The following items are shown in the directory for each utility: Officers, directors; office address; holding company; companies controlled; utilities served at wholesale; communities served; electric revenue; total assets; generating capacity; and energy generated. The directory is bound in blue simulated leather with a page size of 6 by 9 in. It is sold at $2.00 a copy by the Federal Power Commission only, to which all orders should be addressed. For convenience in ordering, the publication is known as "FPC-S-19."

Engine Adjustments for War-time Fuels—C. E. Smith, research laboratories, Ethyl Gasoline Corp., Detroit, Mich. Due to the present war emergency, every effort of the petroleum industry is being directed toward the all-out production of essential war materials. Civilian fuel has taken a secondary place in the present refining program, and present-day fuels are the best product a refiner can make after he has met the demands of the war effort. Civilian fuels are becoming less volatile and of lower octane

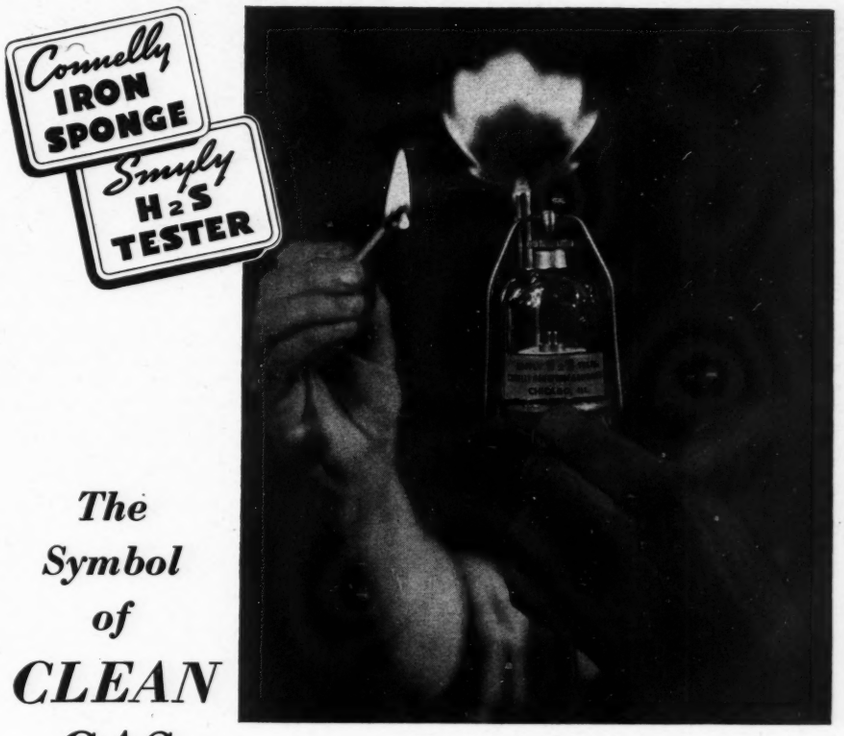
number. In the past few years commercial engine manufacturers have kept pace with improved gasolines by designing engines with higher compression ratios, colder intake manifolds, and leaner carburetion. This trend has offered commercial vehicle operators continued improvements in both performance and economy. Likely reduction in octane number and lowered volatility of motor gasolines for civilian use may result in a decrease in performance and economy, and additional maintenance costs can be expected if modern commercial engines are not adjusted to accommodate this change in fuels. Adjustments will not entirely compensate for a loss in performance and economy, but they can eliminate excessive maintenance costs and also keep power and economy losses to a minimum. The adjustments that can be made are listed and discussed. They include ignition timing, lower compression ratios, carburetor adjustments, and use of blended premium and regular gasolines.

The Chemical Technology of Petroleum—William A. Gruse and Donald R. Stevens of Mellon Institute of Industrial Research (McGraw-Hill Book Co., 330 W. 42nd St., New York City, $7.50). Gruse's Petroleum and Its Products has herein been completely revised, and the result is a greatly enlarged and almost entirely new book, outlining a chemical discussion of the properties, refining, technique and utilization of petroleum. The volume brings an excellent source of study data on the revolutionary developments of this most recent and intriguing of the great organic raw materials within the ken of advanced students and experienced scientists alike. It contains a wealth of new up-to-date material on distillation, physical properties, motor fuels, lubricants, cracking, crude oils, refining of oil stocks, etc.; and an interesting study of thermodynamics as applied to the problems of hydrocarbon chemistry, production chemistry, etc., is included.

Within the 18 chapters a successful attempt has been made to cover all phases of the industry. The book's invaluable appendix on the physical properties of hydrocarbons alone will make it a "must" in the reference libraries of those associated with petroleum and affiliated industries.

Free Energies and Equilibria of Isomerization of Butanes, Pentanes, Hexanes, and Heptanes—Frederick D. Rossini, Edward J. R. Prosen, and Kenneth S. Pitzer. (RP1440), price 5¢. This research paper may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Investigations During 1938, 1939 and 1940 of Combustibles in Manholes in Boston, Mass.—G. W. Jones, T. H. Haines, T. F. Smith, and W. J. Huff (published by the U. S. Department of Interior, Bureau of Mines, as Report on Investigations 3604). In cooperation with the Edison Electric Illuminating Co. of Boston, Mass., and the Boston Consolidated Gas Co., the Bureau of Mines, United States Department of Interior, has conducted a survey continuously since 1929 to determine the general hazards of combustible gases and vapors in manholes of the Edison Electric Illuminating Co. An average of 1.8% of the manhole tests showed combustibles during the entire period; the percentages for the last four years of the survey have ranged from 0.3 to 0.7. A general survey of the constituents present in manholes during the period showed three types of contamination. Contamination from more than one source was not uncommon, and often there was no sharp dividing line between the different classes of contamination.



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Prize winning Photo by C. F. Cramer, Ohio Fuel Gas Co., Toledo, Ohio

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In these same plants Smyly H_2S Testers provide a permanent test record of freedom from H_2S. Complete test with prepared paper discs can be made in a minute's time and the discs filed for future reference. No muss — no fuss — no bother.

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PEOPLE

The election of **Harry Newcomb** as a vice president of Servel, Inc., Evansville, Ind., has been announced by **Louis Ruthenburg,** president of the company. Mr. Newcomb will continue as general manager of Servel's electric refrigeration division, a post he has held since 1936. He is also general manager of Servel's new gas water heater division which was established last year. He joined the Servel organization in 1934 as manager of the company's commercial refrigeration division.

Harry Newcomb

Prior to his affiliation with Servel, Mr. Newcomb was commercial sales manager of the Norge Division, Borg Warner Corp., Detroit. He has been identified with the refrigeration industry since 1926, when he left the automobile business to join Copeland Products, Inc., Detroit and Mt. Clemens, Mich., as sales manager. He later became commercial sales manager of that company.

• •

The election of **R. H. Lewis** as vice president of the Ruud Manufacturing Co. was the only change made in the slate of officers when the company's board of directors met on Sept. 29. Mr. Lewis succeeds **H. S. Humphrey,** who resigned.

Directors elected for the ensuing year by the stockholders of the Ruud Manufacturing Co. at the annual meeting held in Pittsburgh, Sept. 21, included: **A. P. Brill, W. R. Daley, John T. Duff, Jr., E. J. Horton, H. S. Humphrey, R. H. Lewis** and **John H. Sorg.**

• •

Hance H. Cleland, president of the San Diego (Calif.) Gas & Electric Co., has been named a vice president of the San Diego Chamber of Commerce.

• •

Declaring that he has worn out two horses, two buggies and three Ford coupes in his 32½ years of service with the collection department of the San Diego Gas & Electric Co., **F. E. Thompson** has retired to devote his time to gardening.

• •

A. H. Sutton, president of the Mission Water Heater Co., Los Angeles, has been appointed to the Plumbing and Water Heating Industry advisory committee of the War Production Board.

• •

After almost 40 years of service with the Cincinnati Gas & Electric Co., **John Glazer** retired on Oct. 2. Mr. Glazer worked in several of the company's departments, but during recent years was associated with the appliance service and repair department.

• •

Ruth Clark is a new member in the home service department of the Gas Service Co., Kansas City. She will work in Wichita where she will be assistant to **Mrs. Doris Heidrick,** home service director. Miss Clark graduated from Kansas State College in 1942 where she specialized in commercial home economics.

• •

Ben L. Sutton, assistant to **Signor Fink,** superintendent of The Gas Service Co., Topeka, Kan., has accepted a position with the FBI for the duration. He has been associated with various branches of the The Gas Service Co. since 1928.

• •

Chester Young has assumed the duties of house heating engineer for the Dallas Gas Co. since **O. K. Kinzer,** who formerly held the position, was commissioned captain in the Army Engineers Corps. Mr. Young has served with the Dallas Gas Co. since 1933.

• •

P. McDonald Biddison, consulting engineer from Dallas, Texas, has accepted a position with the War Production Board in the power branch, gas supply section, Washington, D. C.

• •

Deputy Petroleum Coordinator Ralph K. Davies has announced the appointment of **Seth W. Herndon,** an independent oil man of Tulsa, Okla., as director of natural gas and natural gasoline for District 2. Mr. Herndon assumed his post on leave of absence as president of the Herndon Drilling Co. of Tulsa.

Experienced in production of oil, natural gas and natural gasoline, the new district director has been actively engaged as an independent oil man since 1921, when he became general superintendent of the Bu-Vi-Bar Petroleum Corp. of Tulsa. In 1925 he left that company to form his own organization.

Mr. Herndon will have charge of all natural gas and natural gasoline work for OPC in the following 13 states in District 2: Michigan, Tennessee, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas and Oklahoma.

Communications may be addressed to Mr. Herndon at the OPC District Office, Sta. 1336, 120 South La Salle St., Chicago, Ill.

• •

L. C. Roberts and **Bruce Cunningham,** members of the Lone Star advertising department, have been appointed to the Dallas Fire Prevention Council. Mr. Roberts, who was named chairman of the reorganized council, is planning to launch an educational and enforcement program for 1943 which will stem the tide of fires such as has swept the country this year.

• •

Dudley E. Heath has been named head of the patent department of Servel, Inc., Evansville, Ind., it was announced by **Louis Ruthenberg,** president of the company. Mr. Heath replaces **William T. Hedlund,** who resigned to assume the presidency of the Elastic Stop Nut Corp. Mr. Heath has been assistant to Mr. Hedlund since 1930.

Lieut. Gen. William S. Knudsen, production chief of the War Department, visited the Servel plant recently and renewed his acquaintance with Mr. Ruthenberg, who was associated with Lieut. Gen. Knudsen two decades ago while they were both with General Motors, Inc. The lieutenant general was in Evansville on an inspection tour of local war industries. He had in his party **Lieut. Frederick R. Reichmann,** until 18 months ago assistant foreman in the unit division of Servel.

• •

C. C. Young, for the past eight years assistant to **F. M. Rosenkrans,** general sales manager of the Gas Service Co., Kansas City, has been appointed senior engineer in the Power Branch of the War Production Board, Washington. Mr. Young has accepted the appointment for the duration.

Mr. Young brings to his new position a wealth of engineering experience gleaned in his years of association with the gas industry. He has been connected with the Kansas City Gas Co., the Capital Gas & Electric Co. in Topeka, and the Gas Service Co., Kansas City. He brought distinction to himself in 1926 by his engineering and development work on a gas conversion burner. The principles of Mr. Young's leaning radiant type of conversion burner were incorporated in the Janitrol Burner manufactured by the Surface Combustion Corp., Toledo, Ohio.

Mr. Young has been active in the work of the American Gas Association.

• •

C. D. Lockwood of Houston, Texas, has been named assistant director in the office of petroleum coordinator's research division, Deputy Coordinator **Ralph K. Davies** announced. Mr. Lockwood replaces **Oliver S. Ambrose,** who returned to Tide Water Associated Oil Co.

• •

Julian B. Turner has been appointed director of personnel of the Federal Power Commission. He succeeds **Horace M. Thomas,** who was recently appointed administrator for the Commission's regional office in Chicago, Ill.

• •

Charles E. Wilson has resigned as president of General Electric Co., Milwaukee, Wis., to assume chairmanship of the production executive committee of the WPB. **Philip D. Reed,** former chairman of General Electric, has also been appointed an official of the WPB. These two vacancies in the executive board of the Wisconsin concern have been filled by **Gerald Swope** and **Owen D. Young,** who have returned from retirement to occupy their former positions.

Two employees of the Southern Counties Gas Co., Los Angeles, Calif., are shown being inducted into the WAVES by Lieut. Frances E. Shoup at the Los Angeles, Calif., Naval Armory in September. They are Elizabeth Lowther of the personnel department, who enters this branch of the service as a lieutenant (j. g.), and Genevieve Plagman of the advertising department, who becomes an ensign.

Joseph F. Wilbur of Boston, Mass., has been appointed chief of the Plumbing and Heating Branch, WPB, a vacancy occasioned by the resignation last month of **W. Walter Timmis. Ronald Allwork** of New York City had been serving as acting chief before Mr. Wilbur's appointment.

• •

George G. Dormer, former plant superintendent of Wisconsin Power & Light Co., Beloit, Wis., is now located at Louisiana, Mo., where he is associated with the Hercules Powder Co., Wilmington, Del., in an engineering capacity.

• •

A. J. (Spike) Wallace is now located at 20 North Wacker Drive, Chicago, where he is associated with the conservation division of the WPB. Mr. Wallace, an industrial specialist, was formerly associated with American Gas Products Corp., American Radiator Co., as vice president.

• •

Leon J. Willien, well-known member of the gas industry, has accepted the position of head consultant of manufactured gas with the power branch of WPB, with headquarters in Chicago. While serving in his new capacity, Mr. Willien will retain his present connections with Public Utility Engineering Service Corp., Chicago.

• •

J. W. Pennell, Southern California Gas Co. executive, has been transferred to the Beverly Hills branch, succeeding **E. F. Aigner,** who has been assigned to the Hollywood district.

• •

W. Walter Timmis, chief of the WPB plumbing and heating branch, has resigned to join the armed services, it was recently announced by **A. I. Henderson,** deputy director general for industry operations. **Ronald Allwork,** New York City, has been named acting chief of the branch.

• •

Bailey Meter Co., Cleveland, Ohio, has appointed **L. F. Richardson** branch manager of its newly established Los Angeles office and **H. T. Sawyer** branch manager of its new office in Seattle. Both these offices had previously functioned as branches of the San Francisco office. **V. A. Rumble,** manager of the company's San Francisco office, will continue as West Coast supervisor.

• •

The Montana Railway State Public Service Commission has appointed **Fred C. Platt** to the position of state oil and gas inspector, succeeding **T. H. Harriman,** resigned. Mr. Platt is a petroleum engineer and geologist and a Montana oil operator.

• •

Harold V. Coes, vice president of Ford, Bacon & Davis, Inc., New York City, has been elected president of the American Society of Mechanical Engineers, it is announced by **C. E. Davis,** secretary.

• •

Harold L. Ickes, petroleum coordinator for war, announced the appointment of **Allen A. Jergins,** vice president of Jergins Oil Co. of Long Beach, Calif., as director at large for the office of petrloeum coordinator's facility security division.

Mr. Ickes at the same time named four district directors for the facility security division. They are: **Frank A. Epps,** president, Spartan Oil Co., Dover, N. J., for district one (East Coast); **Edward J. Bullock,** New York, recently retired vice president of Standard Oil Co. of Indiana, for district two (Mid-West); **George Sawtelle,** president of Kirby Petroleum Co., for district three (Gulf

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Editors . . . Nutrition Experts

Praise Nutrition

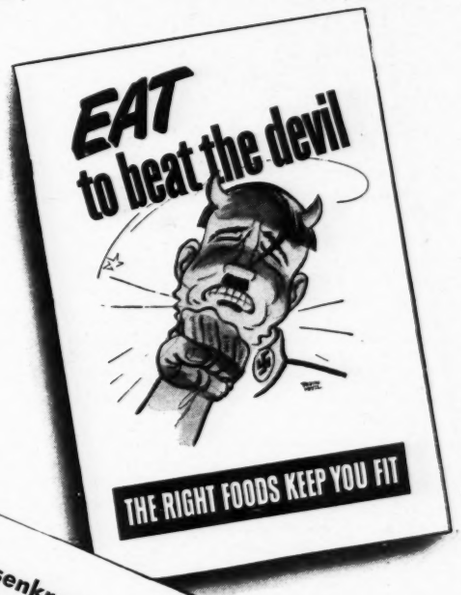
John W. West, Jr.
American Gas Association . . .
"I WELCOME THE SERVEL NUTRITION IN INDUSTRY PLAN AS ANOTHER IMPORTANT WAY IN WHICH THE GAS INDUSTRY CAN MAKE A VITAL CONTRIBUTION TO THE WINNING OF THE WAR. I HEARTILY URGE EVERY GAS COMPANY TO TAKE FULLEST ADVANTAGE OF IT."
Miss Eleanor Sense
American Home Magazine
Author, "America's Nutrition Primer"
"THE NEED FOR AN INTELLIGENT AND WORKABLE PROGRAM TO IMPROVE THE EATING HABITS OF WAR WORKERS HAS BECOME INCREASINGLY URGENT. EVERY INDIVIDUAL NEEDS TO FOLLOW THE NUTRITION PROGRAM AS A CONTRIBUTION TO HELP WIN THE WAR. YOUR PLAN TO IMPROVE THE NUTRITIONAL STATUS OF WORKERS IS A FORWARD MARCH TO VICTORY."
Ronald A. Malony
Sales Manager
Bridgeport Gas Light Company . . .
"FROM OUR OWN EXPERIENCE IN BRIDGEPORT, I KNOW THERE IS A TREMENDOUS NEED FOR IMPROVING THE EATING HABITS OF OUR WAR WORKERS. THE SERVEL NUTRITION IN INDUSTRY PLAN IS THE ONLY PROGRAM WHICH COMPLETELY ANSWERS THIS NEED. IT OFFERS GAS COMPANIES A SPLENDID OPPORTUNITY TO SERVE THEIR COUNTRY AS WELL AS GAIN VALUABLE GOOD-WILL IN THEIR COMMUNITIES."
Miss Jessie McQueen
Home Service Counsellor
American Gas Association . . .
"A STUDY OF THE SERVEL NUTRITION IN INDUSTRY PLAN HAS CONVINCED ME THAT IT IS THE BEST SOLUTION WE HAVE TO AN EXCEEDINGLY SERIOUS WARTIME PROBLEM. SERVEL HAS DONE A FINE JOB--ONE FROM WHICH THE ENTIRE COUNTRY WILL BENEFIT."
Miss Ada Bessie Swann
Woman's Home Companion . . .
"THE SERVEL NUTRITION IN INDUSTRY PLAN WILL MAKE IT EASY FOR OUR WAR WORKERS TO GET THE PROPERLY BALANCED MEALS THEY NEED TO STAY HEALTHY AND ON THE JOB. IT'S COMPREHENSIVE, YET SIMPLE ENOUGH FOR ANYONE TO UNDERSTAND. THE GAS INDUSTRY IS TO BE CONGRATULATED FOR SPONSORING THIS PLAN AND FOR PUTTING IT INTO OPERATION."

. . . Gas Company Officials *In Industry Plan*

. . . as a simple, practical way to save vital man-hours, speed production in America's war plants!

THE Servel Nutrition In Industry Plan has been officially announced to representatives of the Gas Industry, magazine editors, nutrition experts and civilian defense officials. Printed here are some of their comments. They typify the enthusiasm with which the Plan has been received throughout the country.

This widespread enthusiasm is already helping to speed the adoption of the Nutrition In Industry Plan in America's war industries. It is also creating a genuine feeling of good will in the public mind for the spirit and patriotism of Gas Companies everywhere. You can profit from this public good will by supporting the Servel Nutrition In Industry Plan.

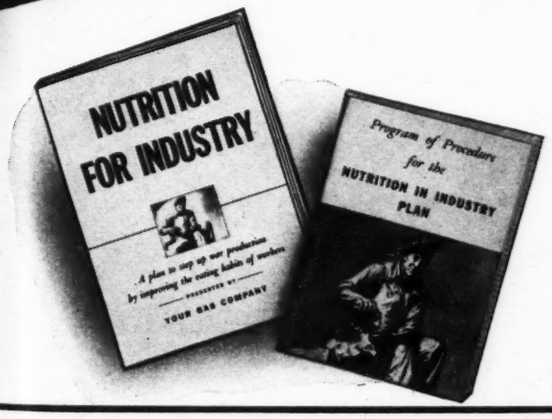


C. V. Sorenson, Chairman A. G. A. Refrigeration Committee . . .

"GOVERNMENT INTEREST IN PROPER DIET MAKES SERVEL INDUSTRIAL PROGRAM VERY TIMELY. SIMPLICITY OF OPERATION AND ACCEPTANCE OF THE PLAN BY WORKERS IN YOUR PLANT IMPRESSED ME GREATLY."

F. M. Rosenkrans, New Business Mgr. The Gas Service Company . . .

"THE SERVEL PROGRAM OF NUTRITION IN INDUSTRY, SUPPORTED BY THE NATIONAL ADVERTISING PRESENTATION, IS A SPLENDID CONTRIBUTION TO THE WAR EFFORT AND PRESENTS AN EXCEPTIONAL OPPORTUNITY TO THE GAS INDUSTRY FOR ACTIVE LOCAL PARTICIPATION. THE GAS SERVICE COMPANY WILL GIVE ITS WHOLE-HEARTED COOPERATION AND SUPPORT."


NUTRITION FOR INDUSTRY
A plan to step up war production by improving the eating habits of workers
PRESENTED BY
YOUR GAS COMPANY
Program of Procedure for the
NUTRITION IN INDUSTRY PLAN

These materials have been prepared to help you put the Servel Nutrition In Industry Plan to work in your community. If you have not received your supply, please get in touch with us as soon as possible. Servel, Inc., Evansville, Ind.

SERVEL, *Inc.*

MANUFACTURER OF THE SERVEL GAS REFRIGERATOR

BUILDS GOOD WILL FOR GAS AND GAS SERVICE

Coast); and **George F. Prussing,** executive secretary for the Western Region PIWC committee on protection of petroleum facilities, for district five (Pacific Coast).

• •

Fred Keune, gas sales manager, Florida Power & Light Co., Miami, Fla., entered the Army in September as a V. O. C. He is a member of the Southern Gas Association and a director of Florida-Georgia Gas Meters Association.

• •

Larry Sogard has accepted the position of assistant public relations director for Citizens Gas & Coke Utility, Indianapolis, Ind., replacing **Herb Tree,** who resigned to join the staff of industrial relations department of General Motors' Delco Remy plant in Anderson.

• •

Officials of Brooklyn Union Gas Co., Brooklyn, N. Y., have announced the appointment of **J. J. Deely** as acting new business manager to succeed **W. E. Bolte,** now with the Army Engineering Corps.

Mr. Deely has been with the Brooklyn Union Gas Co. since 1930 and has served as supervisor of the house heating division, retail sales supervisor and domestic sales manager. Mr. Bolte entered the company in 1928 and has been apartment house supervisor, domestic sales manager, and since 1939 new business manager.

• •

Several new changes in the personnel of The Peoples Gas Light and Coke Co., Chicago, Ill., have been announced. **William J. Menet** was appointed acting assistant superintendent of central district, replacing **John O'Connor,** now on leave of absence for military service. **Loren Smith** has been named assistant superintendent in the customers order department, and **Henry W. Ziethen** is to be the new superintendent of tax administration, succeeding **C. R. Lubke,** who resigned. Further appointments to assistant superintendent positions include that of **William T. Mott** to the property accounting department and **James C. Messer** to the methods and routines department.

• •

When the Southwestern Association of Industrial Editors met recently at Stillwater, Okla., two Dallas editors of utility company house organs were elected officers.

Mrs. Alta Ewalt Evans, director of advertising for the Southern Union Gas Co., Dallas, Texas, and editor of the *Southern Union News,* the company's house organ, was elected vice president of the SAIE. **Clark McElfresh** of the Dallas Power and Light Co., Dallas, Texas, advertising staff and editor of its four publications, succeeds Mrs. Evans as Texas director of the SAIE.

• •

The following business executives connected with the plumbing and heating transportation industry have been named to the industry advisory committees by the WPB: **J. A. Brough,** traffic manager of Crane Co., Chicago; **S. J. Hoehnke,** of Crane Co., Chicago; **George W. Heol,** traffic manager of Trane Co., La Crosse, Wis.; **E. T. Scheck,** L. J. Mueller Furnace Co., Milwaukee, Wis.; and **M. T. Morthey,** traffic manager of Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.

Edward M. Borger, president of the Peoples Natural Gas Co., Pittsburgh, Pa., has been granted a leave of absence to join the American Field Service. Mr. Borger will sail in the near future to join a unit of the Field Service abroad, with which he expects to serve as an ambulance driver.

John J. Jacob, Jr., of Brentwood, executive assistant to Mr. Borger, has been elected a vice president and manager of the company. **S. C. Preston,** vice president since 1936, will continue in that position.

J. J. Jacobs, Jr.

E. M. Borger

Mr. Jacob joined Peoples Natural Gas in 1922 as a member of the civil engineering staff, and was later promoted to chief civil engineer. He was elected a director of the company in 1938 and became executive assistant to the president in 1939.

J. French Robinson, former president of Peoples Natural Gas Co. and now president of East Ohio Gas Co., Cleveland, was elected a Peoples Natural director.

Mr. Borger succeeded Mr. Robinson as president of Peoples Natural Gas Co. in Nov., 1940. He began to work for the company as a stenographer in 1918. On completing his law studies at Duquesne University he moved up into the legal department. In 1935, then aged 34, he became general counsel for Peoples Natural Gas Co., Hope Natural Gas Co., and New York State Natural Gas Corp.

• •

Carl Weiss, formerly chief clerk in the Hollywood office of the Southern California Gas Co., Los Angeles, Calif., has been promoted to the position of office engineer in the standards department in Los Angeles. **L. H. Norwood** succeeds Mr. Weiss in Hollywood and **Albert Medlicott** becomes local manager at Redondo, succeeding Mr. Norwood.

Other changes in the personnel of the Southern California Gas Co. include the appointment of **P. J. Hoshaw** as district agent at Bakersfield, Calif., succeeding **Oliver Jacobi,** who has resigned. **W. H. Aspy** is taking over Mr. Hoshaw's former position as assistant supervisor of the telephone order section in Los Angeles.

• •

General Manager Arthur F. Bridge of the Southern Counties Gas Co., Los Angeles, has announced the appointment of **Robert Ott** as superintendent of the San Diego pipe line, to succeed **F. E. Jinnett. R. J. Klaasen** has been transferred to Dan Point as pipe line construction foreman.

• •

S. J. Modzikowski, chemical engineer of the Peoples Gas Light and Coke Co., Chicago, Ill., has been elected commander of the Peoples Gas Post of the American Legion.

Mr. Modzikowski was formerly actively engaged in AGA work, having served as chairman of the chemical committee and vice chairman of the technical section for a number of years.

• •

W. M. Jacobs, general superintendent of sales, Southern California Gas Co., Los Angeles, has been elected to the gas industry's committee on national advertising, represent-

GREENLEE HYDRAULIC PIPE PUSHERS

20 and 75 TONS of Power

PUSH PIPE UP TO 36 INCHES

No Extra Power Equipment Required

You don't waste time and money digging trenches when installing pipe underground with Greenlee Hydraulic Pipe Pushers. There's no pavement cutting, no tunneling, no backfilling, no repaving. Only a short trench is dug to accommodate the pusher and pipe, and one or two men pumping the handles can easily push pipe under sidewalks, streets, highways, embankments, and railroad tracks. The Greenlee No. 790 Pusher will push 1¼ to 4-inch pipe while the No. 795 Pusher, with a 75-ton hydraulic unit, will handle large drainage ducts, concrete sewer pipe, and pipe beyond 4-inch. Both Greenlee Pushers are built compactly into one unit, and are easily carried to the job and set up. No extra equipment of any type needed . . . the powerful hydraulic units do the actual pushing. Write today and learn how these Pushers can save you money on every pushing job.

SEND FOR NEW S-117 PUSHER BULLETIN

GREENLEE TOOL CO.

1951 Columbia Ave. Rockford, Ill.

ing participating companies in California. He has also been appointed to the national advertising copy committee. Mr. Jacobs succeeds **J. S. Spaulding,** advertising manager of the Southern California Gas Co., who is now a captain in the Army Air Corps.

• •

Appointment of **James E. Watson** as general manager of the Merco Nordstrom Division of Pittsburgh Equitable Meter Co., Pittsburgh, Pa., has been announced by **Col. W. F. Rockwell,** president.

J. E. Watson

Mr. Watson brings to the Nordstrom organization a wealth of executive experience in technical, production and managerial duties, having been associated with the Elliott Co., Jeannette, Pa., for 30 years, during the last five of which he was president.

He assumed his association with the Nordstrom firm several months ago as assistant to Colonel Rockwell in Pittsburgh and was more recently elevated to the general managership of the Oakland production division.

Obituaries

Alfred H. Schoellkopf

Alfred H. Schoellkopf, 49, president of Niagara Hudson Power Corp., died recently after an illness of several months. Mr. Schoellkopf was a graduate of the Massachusetts Institute of Technology and started work for the Hydraulic Power Co. of Niagara Falls. In 1920 he was appointed vice president and director of the Niagara Falls Power Co., and in 1925, when Buffalo, Niagara & Eastern Power Corp. was formed, he was made a director and vice president and served as general manager until 1929.

In 1933, after four years as president of BNE, he resigned to become president of Niagara Hudson Power Corp., a position he held until his death.

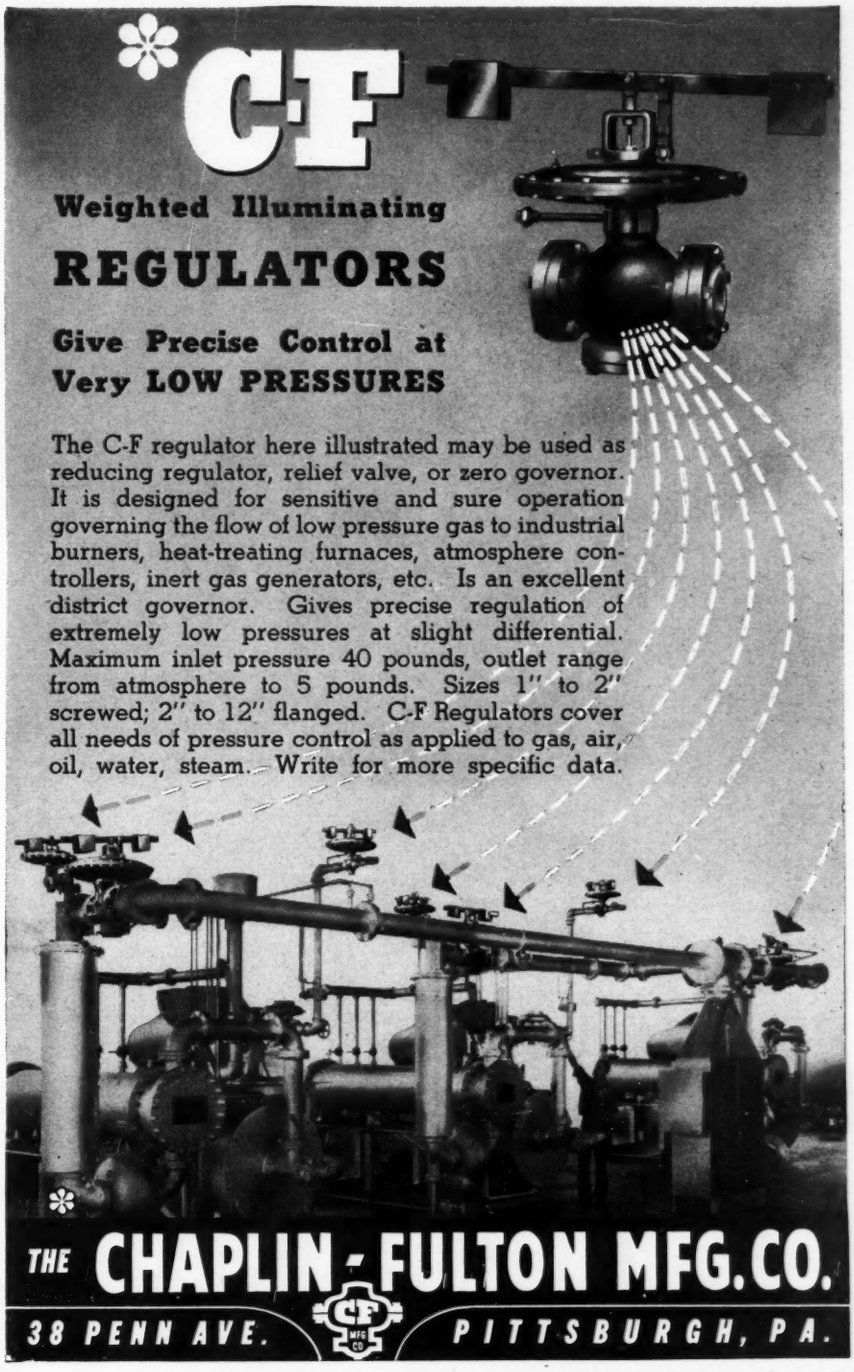
Noted in social welfare circles for his careful planning and broad insight into civic problems, Mr. Schoellkopf was in demand by many organizations. He was chairman of the New York State Board of Social Welfare and president of the Welfare Council of New York City, and was formerly chairman of the New York State Temporary Emergency Relief Administration.

■ ■

William E. Clow

William E. Clow, chairman of the board of James B. Clow & Sons, died at his home in Chicago on Sept. 14. In 1878 Mr. Clow, together with his father, founded the company of James B. Clow & Son, and when two other brothers joined the company the name was changed to James B. Clow & Sons.

Mr. Clow was one of the early pioneers of the plumbing and heating business. Today, after 64 years, the firm, which he established on a $300 capital, is recognized as one of the largest jobbers of plumbing and heating supplies in the United States and a large manufacturer of cast iron pipe with factories in Chicago, Birmingham, and Coshocton, and Newscomerstown, Ohio. The National Cast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Weighted Illuminating
REGULATORS
Give Precise Control at
Very LOW PRESSURES
The C-F regulator here illustrated may be used as reducing regulator, relief valve, or zero governor. It is designed for sensitive and sure operation governing the flow of low pressure gas to industrial burners, heat-treating furnaces, atmosphere controllers, inert gas generators, etc. Is an excellent district governor. Gives precise regulation of extremely low pressures at slight differential. Maximum inlet pressure 40 pounds, outlet range from atmosphere to 5 pounds. Sizes 1" to 2" screwed; 2" to 12" flanged. C-F Regulators cover all needs of pressure control as applied to gas, air, oil, water, steam. Write for more specific data.
THE CHAPLIN-FULTON MFG. CO.
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SUBSCRIPTION RATES: United States, Mexico, Cuba, South and Central American countries (in advance), two years $3.00; all other countries, $3.00 per year.

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Iron Pipe Co. of Birmingham, Ala., is a division of James B. Clow & Sons. The firm also has a completely owned subsidiary known as the Clow Gasteam Heating Co., which manufactures the Clow Gasteam Radiator.

■ ■

William A. Root

William A. Root, assistant treasurer of Consolidated Edison Co. of New York, died suddenly Sept. 30 at his home in New York. Mr. Root was born on Sept. 25, 1884, at Peal, Pa. He attended public schools in Philadelphia and also completed several special courses on the gas and electric light and power industries.

In 1907 he became assistant to the superintendent of the Geneva Gas Co. at Geneva, N. Y. He was also local superintendent of the Seneca Falls and Waterloo Gas Co. at Waterloo, N. Y., and then sales manager of the Empire Gas & Electric Co., Auburn, N. Y.

He first joined the system companies of the Consolidated Edison Co. of New York in 1912, when he became commercial manager of the Bronx Gas & Electric Co. In 1922 he became treasurer and purchasing agent of this company. On the merger of the Bronx Gas & Electric Co. into the Consolidated Edison Co. of New York, in Dec., 1936, he was appointed assistant treasurer of the parent company.

At various times during his career he served actively on committees of the American Gas Association, the National Electric Light Association and the Purchasing Agents Society of New York.

■ ■

Hans Madsen

Hans Madsen, chief shipping clerk of the Madsen Iron Works, Huntington Park, Calif., was killed at the plant Saturday, Oct. 3. He had been a member of the organization since 1915. Two brothers, Pete and Martin, survive Mr. Madsen.

■ ■

Frank Reith Phillips

Frank Reith Phillips, chairman of the board of the Philadelphia Co. & Subsidiary Companies, died on Oct. 23 at his summer home at Valley Forge, Pa., following a short illness.

After more than 32 years of service with the Philadelphia Co. Mr. Phillips retired from the presidency on Jan. 20, 1942.

Mr. Phillips studied engineering subjects at the Case School of Applied Science and later supplemented this with three years of law at Adelbert College, now Western Reserve University, Cleveland. Upon completing his education he became master mechanic of the Cleveland City Railway Co. and later was connected with other utility companies. In 1928 he became vice president of the Equitable Gas Co. and a year later was named senior vice president of the Philadelphia Co. and president of its subsidiary companies. It was in 1931 that Mr. Phillips was elected to the presidency of Philadelphia Co.

■ ■

A. F. Millikan

A. F. Millikan, vice president and member of the board of directors and executive council of the American Stove Co., Chicago, passed away Oct. 10 at the age of 76. Mr. Millikan, who had been with the company for nearly 50 years, served the company also as manager of the Northern Sales Division.

He is survived by his brother, Dr. Robert A. Millikan, chairman of the executive committee, California Institute of Technology, Pasadena, Calif., and by his son, E. P. Millikan, manager, Pacific Coast Sales Division, American Stove Co.

New Panhandle Eastern Line To Serve Appalachian Area

THE Federal Power Commission announced its issuance on Oct. 6 of a limited certificate to the Panhandle Eastern Pipe Line Co., Kansas City, Mo., for the construction of a 16-in. pipe line about 17 miles long extending from a point on the 22-in. main line of Panhandle's wholly owned subsidiary, Michigan Gas Transmission Corp., in Lucas County, Ohio, to the 16-in. line of The Ohio Fuel Gas Co. near Toledo, Ohio.

Construction of the new interconnection will relieve the threatened shortage of natural gas in the Appalachian area. Estimates of the amount of gas to be delivered through the new line range as high as 10 billion cu. ft. per year.

The Commission's action follows a hearing on the conflicting applications filed by Panhandle Eastern and The Ohio Fuel Gas Co. WPB has stated that the interconnection is essential to assure adequate supplies of gas to war industries in the region served by Ohio Fuel Gas.

The certificate issued to the Panhandle Company is subject to the following express terms and conditions:

1. It shall not be transferable except upon approval of the Commission.
2. The pipe line shall be constructed and operated to permit the movement, pressuring and measurement of natural gas in either direction.
3. The use of the pipe line shall not affect Panhandle's ability or capacity to serve its present customers in other states.

■ ■

Surplus Inventory to Cover Servel Refrigerator Parts

Servel, Inc., is acting as a clearing house for the purpose of moving inventory surpluses of usable Servel Electrolux household refrigerator service parts between distributors or from distributor to the factory. The release of these surpluses to distributors requiring them will conserve the critical material required for fabricating these parts at the factory.

Inventories of surplus service parts, as indicated on inventory form "Surplus Inventory of Usable Servel Electrolux Refrigerator Parts," which is form SVN-684, will be filed, and upon receipt of orders for any of these parts from other distributors, they will be referred directly to the owner for quotation, if such parts cannot readily be supplied from factory stock.

Inoperative controls should also be reported in triplicate on "Inventory of Inoperative Servel Electrolux Controls," form SVN-683. Any of these forms will be sent without charge by Servel, Inc., Evansville, Ind., upon receipt of order giving quantities desired and form orders.

■ ■

Gas Company Forced to Sell South Dakota Plant

Properties of the Watertown Gas Co., South Dakota, valued at $318,000, have been offered for sale to the city of Watertown for $30,000, according to Mayor George Beier of Watertown.

Sale of the Watertown company by the owner, the Ohio Gas, Light & Coke Co., Bryan, Ohio, is necessitated under the "death sentence" act of Congress ordering holding companies to dispose of certain operating properties. Deadline for the sale was set by the court for May 1, 1943.

The property includes 14.95 miles of mains. A total of 933 customers are served by the company in Watertown.

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

A MAXIMUM OF ENGINEERING PERFORMANCE

H-M Low Pressure Gas Regulator. Sizes from ⅜-in. to 2-in.

A Low Pressure Gas Regulator with Efficiency at Its Highest

This Same Precision Production

Is Now Being Used in Making War Materials

To Beat the Axis

Low Pressure Regulators Are Still Available in All Sizes

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THERMO CONTROL CO.

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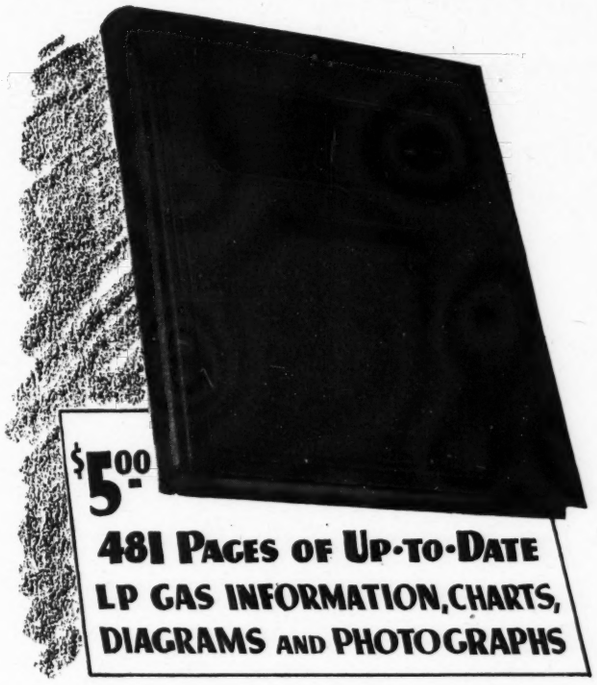
NOW READY- ENTIRELY NEW AND COMPLETLY REWRITTEN



The Big 3rd Edition of the HANDBOOK BUTANE-PROPANE GASES

Between the covers of this Handbook you'll find the answers . . . TODAY'S Answers . . . to every Butane-Propane question you can ask. It's your primary source of authentic, up-to-date information on all LP-Gas operations. New and completely rewritten, the THIRD Edition of the Handbook continues the basic and needed service, which former editions performed for over ten years, of providing the LP-Gas industry with an authoritative manual on all phases of LP-Gas operation.

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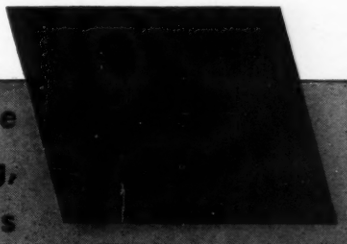
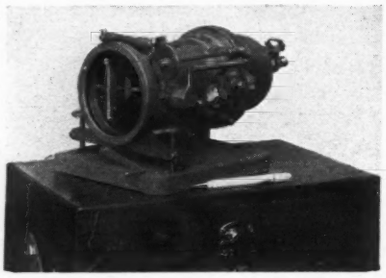


The Only Complete and Authoritative Reference Book on LP-Gas Engineering, Installation and Operating Methods

Quick Facts

about the precision

Arcco-Anubis *Portable* GAS BALANCE



LIGHT WEIGHT — Total weight complete with carrying case **only 20 pounds.**

BUILT FOR FIELD USE — Sturdily constructed to give years of dependable service without babying.

PRECISION-BUILT — Made in the modern Arcco laboratory. Thoroughly tested before shipment.

EASY READING—Both extremes of scale readily seen through large front window.

EASY TO OPERATE — No vacuum pump or other complicated accessories.

ACCURATE TEMPERATURE INDICATOR — Thermometer is mounted **inside,** completely submerged in the gas sample.

PROTECTED AGAINST CORROSION —All metal parts are heavily plated for maximum corrosion resistance.

RIGID METAL BASE — Securely mounted. Base has central pilot hole which can be tapped with thread for any type of tripod.

Arcco Anubis Portable Gas Balances are adapted for use at low pressures or vacuum under actual line conditions.

For full particulars send for **BULLETIN No. 101**

AMERICAN RECORDING CHART CO.

3113 E. 11th St., Los Angeles, Calif.

510 So. Lansing Ave., Tulsa, Okla.

Three Home Service Heads Receive Awards

McCALL'S Magazine Awards, given each year for outstanding contributions to the advancement of better living through proper use of gas appliances and equipment in the home, were presented to three gas companies at the annual meeting of American Gas Association held Oct. 6.

Joie Kammer, home service director of the New Orleans Public Service, Inc., won first prize — an engraved plaque and a War Bond. Florence Matheny, home service director of the Southern Counties Gas Co., Monrovia, Calif., who was one of last year's winners, took second prize, a War Bond and an illuminated parchment. The third prize was awarded to Jeanette Campbell, home service director of the Minneapolis Gas Light Co.—a War Bond and an illuminated parchment.

Prizes are awarded on the basis of the aim of each home service department, training of personnel and salespeople, community activities, increase in scope and home service activities over the preceding year, and accomplishment of the department's aims.

The New Orleans utility's home service department, of which Miss Kammer is director, bases its activities on helping win the war, cooperating with community activities and assisting the homemaker with her wartime problems. Miss Kammer is personally engaged in war work, serving as vice chairman of Orleans Parish Nutrition Committee and as a member of the American Red Cross Nutrition Committee.

Miss Florence Matheny, second prize winner and director of home service for Southern Counties Gas Co. in Monrovia, Calif., successfully launched a nutrition program several months before the war. She has been responsible for the organizing of Red Cross nutrition and canteen classes in every town in her territory.

Third prize winner, Miss Jeanette Campbell, was with the East Ohio Gas Co. in Cleveland for three years prior to going to the Minneapolis Gas Light Co. as home service director three years ago.

Chairman of this year's Jury of Awards was B. A. Seiple, vice-president of Jersey Central Power and Light Company, Asbury Park, N. J. Other judges who helped select the winning entries for the McCall's Magazine Award were: W. E. Bolte, manager of New Business Department, The Brooklyn Union Gas Company, Brooklyn, N. Y.; Hall M. Henry, assistant to the president, Negea Services Corp., Cambridge, Mass.; R. B. Denhardt, sales manager, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y.; R. E. Williams, new business manager, Binghampton Gas Works Co., Binghampton, N. Y.

■ ■

New Standards Govern Gas Equipment Installations

Two American Standards, one governing requirements for installation of gas-burning equipment in power boilers (ASA No. Z21.33-1942), and the other governing listing requirements for gas valves (ASA No. Z21.15-1942), have been approved by the American Standards Association. The first of these standards, which were developed under the leadership of the American Gas Association, covers such requirements as installation of burners and controls; gas piping and meters; inspections and tests; as well as boiler room ventilation, accessibility for cleaning and inspection, and flues and flue connections.

The approved standard listing requirements for gas valves include such construction requirements as dimensions; compensation for wear; valve stems and handles; stops; latching type valves; strength; materials; assembly and marking; and such performance requirements as leakage; capacity; gas range burner valves with adjustable orifices, and continued operation.

■ ■

Servel Staff Holds Annual Conference

MEETING to discuss plans for further contributions to the war effort, more than 100 field and staff members of Servel, Inc., attended the company's annual conference in Evansville, Ind., on Oct. 12-14. George S. Jones, Jr., vice president and general sales manager, presided over the three-day session.

A highlight of the sessions was a full day seminary on Servel's Nutrition in Industry campaign which was conducted by Robert J. Canniff, advertising and sales promotion manager.

When Prescott B. Wiske, service manager, addressed the conference he told them that the two million Servel gas refrigerators now in operation in the United States and Canada will receive the best possible maintenance care for the duration.

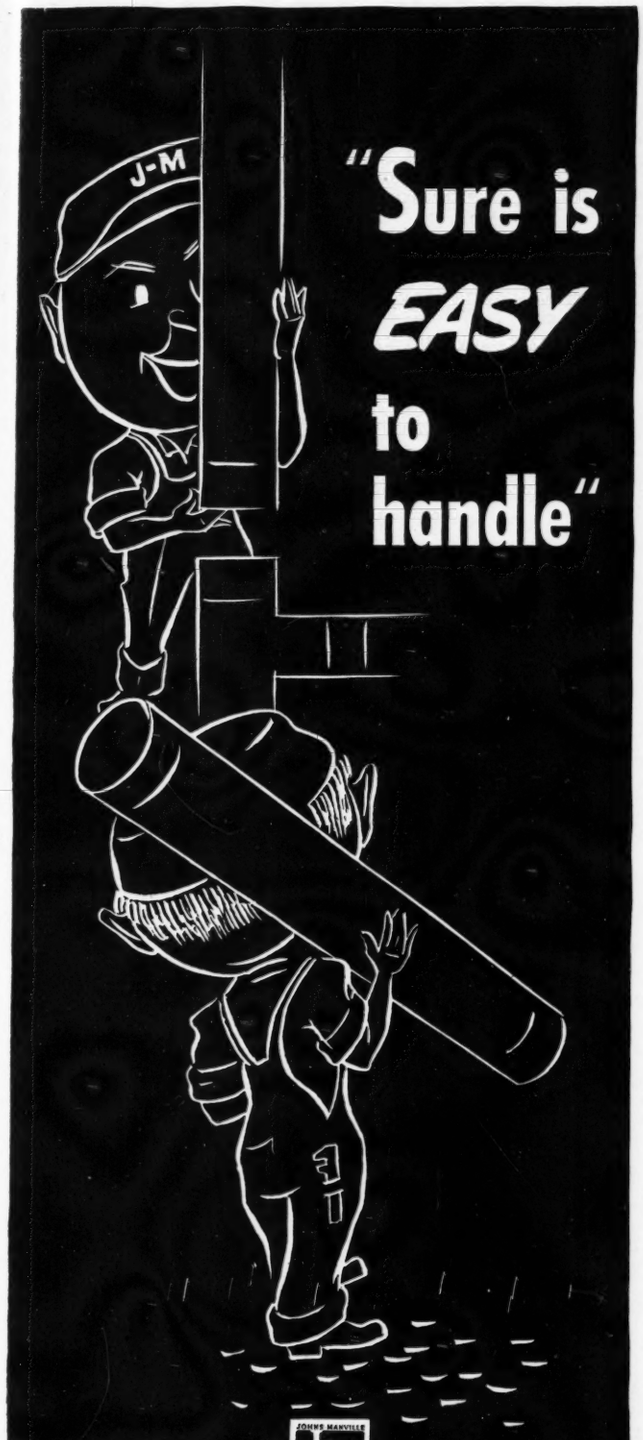
Louis Ruthenburg, president of Servel, was the speaker at a special joint session on the second night of the conference at which 200 members of the factory supervisory staff were present.

■ ■

War Bonds Awarded Victory Garden Winners

In tune with the nation-wide patriotic appeal to plant victory gardens this year was the garden contest sponsored by *Gas News*, house organ of The Peoples Gas Light and Coke Co., Chicago, Ill., results of which have just been made known.

In all 63 employees entered the contest and produced excellent evidence of a summer's toil with their fine assortment of fruits and vegetables. Prizes in war bonds were awarded to: James Rogers, Markham, Ill.—first prize, a $100 War Bond; Anton Jacovac, Chicago—second prize, a $50 War Bond; Milton P. Rogers, Downers Grove, Ill.—third prize, a $25 War Bond. Consolation prizes went to Leonard Adams and Herman Laude.



Johns-Manville
TRANSITE FLUE PIPE
AN ASBESTOS PRODUCT
For venting gas-burning appliances

REYNOLDS Gas REGULATORS

Insure Accurate Gas Control
from one ton pressure ★★★
Down to inches W·C·★★★

REGARDLESS of requirements, there is a Reynolds Regulator ready to solve your Gas Control problems. All Reynolds Regulators are built to fulfill certain specific requirements. This is one of the reasons why all Reynolds Regulators are recognized as Leaders in Gas Control.

REYNOLDS Engineering policy of close cooperation with the trade has resulted in the development of a competent Engineering Department. This service is available upon request and insures proper installation necessary for Safe, Efficient Control.

★ ★ REYNOLDS PRODUCTS ★ ★

High Pressure Service House Regulators:
- Straight Lever Type—Models 10-20 Series.
- Toggle Lever Type—Model 30 Series.

Low Pressure Service or Appliance Regulators.

District Station Regulators:
- Single or Double Valve.
- Auxiliary Bowl and Automatic Loading Device, Optional.

High Pressure Line Regulators:
- Pilot Loaded—Pilot Controlled.

Toggle Type Regulators:
- Single Valve, Double Valve, Triple Outlet.

Seals:
- Dead Weight or Mercury.

Relief Valves:
- High or Low Pressure.

Back Pressure Valves:
- Automatic, Quick Closing Anti-Vacuum Valves.
- Automatic Shut-Off Valves.
- Lever Operated Valves.
- Louver Operated Device.

Atmospheric Regulators.

Vacuum Regulators.

REYNOLDS GAS REGULATOR CO.
Anderson, Indiana, U. S. A.
GAS CONTROL SINCE 1892

Natural Gas Pipeline Rate Case Ends

CLIMAXING the largest natural gas rate case in its history, the Federal Power Commission on Sept. 23 terminated its proceedings against the Natural Gas Pipeline Co. of America and its affiliate, Texoma Natural Gas Co., and accepted new rate schedules filed by the pipe line company which will reduce wholesale rates for the natural gas sold to utility customers in Illinois, Iowa, Kansas and Nebraska by an additional $2,738,000 annually.

The new rates, which were ordered effective as of Sept. 20, 1942, coupled with the $3,770,000 reduction arriving from the Commission's "interim" rate order of July 23, 1942, upheld by the Supreme Court, will reduce the pipe line company's wholesale rates and save its utility customers about $6,500,000 a year.

In stating that the new order was instituted for the benefit of the ultimate consumers, the Commission emphasized its desire that information on the rate reductions to wholesale customers be passed on to retail consumers.

On the basis of available data, the new rates accepted on Sept. 23, combined with reductions effected by the Commission's "interim" rate order, will result in a reduction of approximately $5,751,000 in the rates paid Natural Gas Pipeline Co. by the Chicago District Pipeline Co., which sells gas purchased from Natural Gas Pipeline to Peoples Gas Light & Coke Co. for resale in Chicago, and thence to other companies in Illinois and Indiana.

The Sept. 23 order also states that any reduction in rates or charges received by Natural Gas Pipeline for natural gas purchased from the Colorado Interstate Gas Co. as a result of the reductions in Colorado Interstate's wholesale rates ordered by FPC on March 18, 1942, shall be reflected by additional equivalent reductions in Natural Gas Pipeline's rates and charges. In March the Commission had ordered a reduction of $2,065,000 a year in the wholesale rates of Colorado Interstate, of which $655,000 constituted excessive charges to Natural Gas Pipeline.

■ ■

SEC Rulings

The SEC has ordered dissolution of American Power & Light Co. and Electric Power & Light Co., major units of the Electric Bond & Share Corp.

FPC Places New Time Limit In Rate Schedule Case

THE Federal Power Commission announced Oct. 16 its order extending from Oct. 15 to Nov. 10 the time within which Panhandle Eastern Pipe Line Co. and its affiliates, Illinois Natural Gas Co. and Michigan Gas Transmission Corp., all having main offices in Kansas City, Mo., must file new schedules of rates and charges to reflect a reduction in the companies' wholesale natural gas rates by not less than $5,094,384 annually as ordered by the Commission on Sept. 23. The reduced rates must be effective as to all bills regularly rendered on or after Nov. 1, 1942.

The order and opinion directed that an interim rate reduction be made in the companies' rates and charges for the sale of natural gas in interstate commerce for resale for ultimate public consumption.

The Federal Power Commission found the companies' consolidated net investment to be $66,217,305, which was established by determining $78,814,292 to be the actual legitimate cost of gas plant in service at Dec. 31, 1941, and deducting $12,596,987 as accrued depreciation. To the consolidated net investment the Commission added $920,000 allowed as working capital to fix a total of $67,137,305 as the proper rate base for the purpose of the proceedings. The order allows as annual rate of return of not more than 6½% on the rate base of $67,137,305.

The Panhandle system constitutes the longest natural gas pipe line in the world and serves more than 200 cities, towns and communities with more than 700,000 retail customers in Texas, Kansas, Missouri, Illinois, Indiana, Michigan and Ohio.

■ ■

Construction of Oil Line Hits Record Pace

Construction of the 24-in. war-oil pipe line from East Texas oil fields to Norris City, Ill., hit a record pace of 8.15 miles completed in one day (on Sept. 23), it was reported to the office of the Petroleum Coordinator for War from the Little Rock, Ark., headquarters of War Emergency Pipelines, Inc.

For the past two weeks, an average of approximately six miles of pipe has been laid daily, a record that has not been beaten ever for the laying of 10-in. or 12-in. pipe.

River-crossing pipe line crews have completed over 50% of the river crossings along the route of the 24-in. line. Despite difficult weather conditions nearly 155 miles of pipe have already been placed in the ground, and the laying of the remainder of the line is going forward apace.

Ultimate oil-carrying capacity of the line will be 300,000 barrels of crude oil daily.

■ ■

FPC Authorizes Pipe Line Extension In Louisiana

The Federal Power Commission on Sept. 29 announced issuance of a certificate to the United Gas Pipe Line Co., Shreveport, La., authorizing the construction and operation of an extension to the company's existing interstate pipe lines to connect the gas supply in the Lafourche Crossing field in Louisiana with its pipe line which extends from the Gibson field to its Lirette-Mobile line.

The company's application, filed on Aug. 24, 1942, proposed to meet the increased demands for natural gas, due mainly to the war effort, in the region served by its existing Lirette-Mobile line, through construction of the 5½-mile "Lafourche Extension" to utilize available and adequate sources of supply of natural gas in southern Louisiana. The company estimated the total cost of the extension as $127,000.

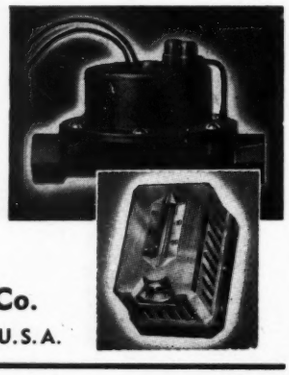
SEMET-SOLVAY
ENGINEERING CORPORATION

Blue Gas Plants
Water Gas Machines
Washer Coolers
Naphthalene Scrubbers
Gas Purifiers
Condensers
Waste Heat Boilers
Producer Gas Plants

40 RECTOR STREET, NEW YORK, N. Y.

Snapped into Service

Klixon Snap-Acting Gas Valves and Room Thermostats are now available only for war plants, military projects, defense housings and similar war work. When ordering, state your preference ratings and end use symbols. Order now for earliest possible delivery.



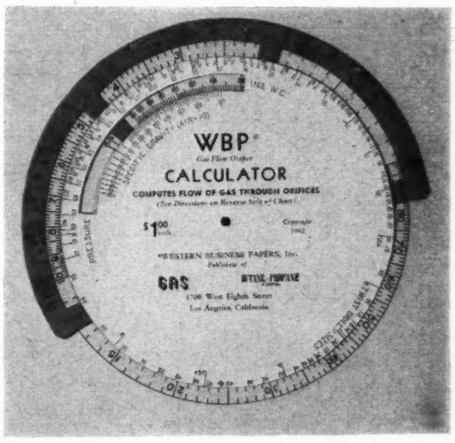
KLIXON
Spencer Thermostat Co.
803 Forest St. Attleboro, Mass, U.S.A.

COMPUTING THE GAS FLOW OF ORIFICES IS

FAST • ACCURATE • EASY

with the new W. B. P. Gas Flow Orifice Calculator

- **Save Up to One-half Usual Time**
- **Eliminate All Possibility of Error**
- **No Calculations . . . No References**
- **Set the Scales . . . Read the Answer**



INVALUABLE to engineers and shop men alike . . . all utility industrial gas salesmen, industrial service engineers, domestic appliance service departments, gas appliance and equipment manufacturers, and all others who have occasion to check or determine orifice sizes for natural, manufactured, or liquefied petroleum gases.

For fast and accurate checking of all factors relative to orifice sizing . . . B. t. u.'s per hour, cu. ft. per hour, gas pressures, drill sizes, etc. Calibrated for orifice coefficients from .6 to 1; gas pressures from .5 to 15 ins. of water; specific gravities from .3 to 2.0; and drill sizes from No. 75 to ½ in.

No other calculator is available to help you short-cut these important and complicated calculations. Simple to operate, it eliminates the possibilities of error inherent in pencil-and-paper computations.

Priced for quantity purchase to enable you to obtain a sufficient number for everyone in your organization concerned with orifice sizing. If for any reason you are not satisfied, you are privileged to return the orifice calculator within 10 days of purchase.

TIME saving is one of the big advantages in using the Gas Flow Orifice Calculator. In a test calculation, the computation was made first by the standard paper-and-pencil method . . . then the same computation was made with the Calculator in less than half the original time. Save man hours with the W. B. P. Gas Flow Orifice Calculator.

How Calculator Operates

To Find Drill Size

1. Rotate movable dial until specific gravity coincides with gas pressure.
2. Rotate movable segment until proper orifice coefficient coincides with desired gas quantity (cu. ft. per hr.). If orifice coefficient is not known, use 0.8.
3. Read drill size on movable dial opposite the arrow (0.8) on the orifice coefficient scale of movable segment.

To Find Cubic Feet Per Hour From B. t. u. Per Hour

1. Rotate movable segment until heating value of gas (B. t. u. per cu. ft.) coincides with gas quantity in thousands of B. t. u. per hour on quantity scale.
2. Read gas quantity in cu. ft. per hour against 1.0 (orifice coefficient scale).

To Find Quantity (Cu. ft. Per Hour) for Given Drill Size

1. Rotate movable dial until specific gravity coincides with gas pressure.
2. Rotate movable segment until arrow (0.8) on the orifice coefficient scale is opposite appropriate drill size.
3. Read quantity (cu. ft. per hr.) against appropriate orifice coefficient. If orifice coefficient is not known, use 0.8.

To Find B. t. u. Per Hour Given Cubic Feet Per Hour

1. Rotate movable segment until 1.0 on the orifice coefficient scale coincides with the gas quantity in cu. ft. per hour.
2. Read corresponding B. t. u. per hour in thousands against appropriate heating value (B. t. u. per cu. ft.).

We pay postage on orders accompanied by remittance. Add 3% sales tax on California orders; 10% excise tax on Canadian orders.

ORDER TODAY

GAS
1709 West Eighth Street
Los Angeles, Calif.

SPECIAL OFFER
25% Discount on All Orders of 25 or More

$1.00 Each

Gentlemen: Please send me.....W. B. P. Gas Flow Orifice Calculators, for which I am enclosing my check (or money order) for $.....

NAME.....

COMPANY.....

ADDRESS.....

10 SAFETY MEASURES TO CONSERVE MANPOWER

THIS FOLDER FREE

You can completely prevent some lost-time injuries, reduce the severity of others and get more man-hours of skilled production by using one or more new ideas in your safety program. Ten such suggestions are included in a free folder, describing experience in war plants. 18-11

Everything BULLARD in Safety

E. D. BULLARD COMPANY
275 Eighth Street
San Francisco, California.
Please send new folder, *"10 Safety Measures to Conserve Manpower,"* to

Name _____
Company _____
Address _____
City _____ *State* _____
G

NATIONWIDE SALES AND STOCKS

SHUTS-OFF the GAS before dangerous water temperature is reached!

Kitson "Defender" Emergency Shut-off Gas Valve

This Kitson Type IHF Valve anticipates trouble; guards against possible "sticky" thermostats; gives positive protection until the fault is remedied. It's specified by many leading gas companies as standard equipment—is A.G.A. approved. ASK ABOUT IT; WRITE TODAY.

★

Positively Prevents Overheating of Gas Water Heater Tanks!

KITSON COMPANY
1500 Walnut St., Philadelphia, Pa.
Subsidiary of the Welsbach Engineering and Management Corporation

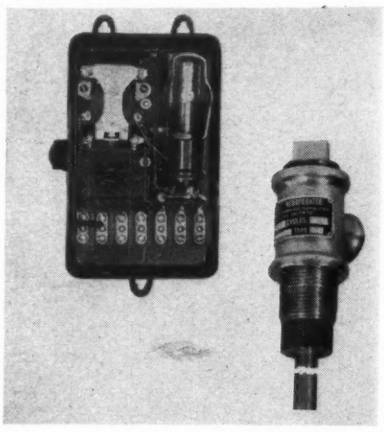
PRODUCTS

Water Detector

Photoswitch, Inc., 21 Chestnut St., Cambridge, Mass.

Model: Electronic Water Detector Lock Type P 15NH.

Description: This instrument is used to indicate water seepage in gasoline storage tanks. It is supplied with Probe Fitting Type H31. The probe fitting is mounted in a stand pipe fitting on the top surface of the tank, the probe rod projecting down through the tank to the level at which water seepage is to be detected—usually 3 in. from the bottom of the tank. The detector is located at any point remote from the tank and wired to the probe. When water seepage rises to contact the probe tip, an electrical circuit is completed through the water itself, the water detector lock operates, turning off pumping equipment and actuating an alarm circuit. It operates on 115 or 230 volts A. C. Battery-operated P15 NB is also available as standard. The instrument will handle output loads up to 10 amperes at 115 volts A. C. and it is supplied in a weather-proof, pressed-steel housing, finished in green crystal. Explosion-proof housings are available.



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Flue System

American Stove Co., 4301 Perkins Ave., Cleveland, Ohio.

Model: Magic Chef Standard Concealed Flue Systems.

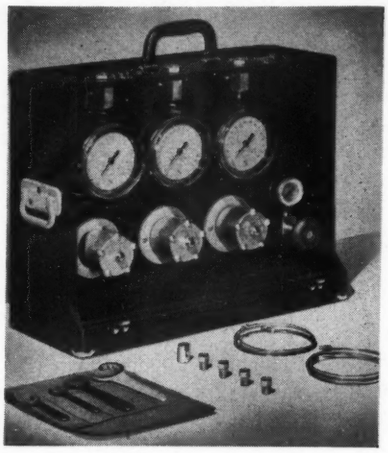
Description: These important improvements in the Magic Chef Standard Concealed Flue Systems for heavy duty ranges are highlighted by the fact that the systems, being entirely self-contained within the battery, save space and make for greater ease of cleaning and better operating efficiency. Each separate unit of the battery is provided with an individual 4-in. by 8-in. flue opening or vent, insuring proper venting, which means obtaining the most heat value from the fuel, and also aids in keeping the kitchen cooler. Risers extend 42 in. above range tops, and are available in sizes for single vent, two-vent or four-vent.

Pressure Gauge Tester

Grove Regulator Co.

Model: Grove Portable Pressure Gauge Tester.

Description: This instrument is compactly designed for checking all types of mounted pressure gauges in service without removing them from their panels or mountings. It permits service gauges to be quickly and accurately checked "in place" without breaking line connection. Equipped with three precision laboratory test gauges, accurate to within ¼ of 1% of full scale, the Grove Comparator will check various ranges of pressure gauges from zero to 1000 lb. Necessary testing pressures are supplied from built-in high-capacity air cylinder, which can be charged and recharged as often as required with any clean, dry gas, air or oxygen. This fine degree of pressure control is made possible by three Groves Pressure Loaders mounted below each test gauge. Because of their large diaphragm-to-valve area ratio, these loaders provide positive pound-by-pound controlled and maintain accuracy of delivery pressure, whether increasing, decreasing or constant.



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Gas Welding Flux

Park Stewart, 1011 Carbis St., Worthington, Pa.

Model: "Flo-Ez-Flux."

Description: An improved, free-flowing flux for the gas welding of aluminum and aluminum alloys, guaranteed not to solidify or deteriorate. Flo-Ez-Flux is being used to gas weld either wrought, cast or high tensile aluminum alloys, of any size or shape where welding is possible. It is packaged in a glass container, which prevents corrosion and protects the flux from moisture, and is available in a large number of sizes ranging from ¼ lb. to 25 lbs.

TWO FELLOWS WHO NEED THINGS — UNCLE SAM AND YOU

Today every industry is forging the tools of victory, for America needs planes, tanks, guns, and ammunition. We of Mueller are proud to be doing our part for Uncle Sam. . . But you in the Gas Industry need tools, too! So we are trying to do as much of our regular work as we can along with our war contracts. That means that you who need equipment can probably get it. — If you need drilling and tapping machines, for example, the models shown here are ruggedly built to give you years of service under severe conditions.

You won't find better machines anywhere for those "hurry-up" connections that must be made. An ample assortment of tools provides for a wide range in the work they can do. . . We have a few of these machines in stock ready for early delivery. Just give us your priority rating. —Write Dept. G-9.

"L" TAPPING MACHINE 3/8" to 2"

"H" TAPPING MACHINE 3/8" to 2"

DECATUR, ILL. **MUELLER CO.** LOS ANGELES, CALIF.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

When jobs are tough— and time is short—

"Clevelands" Come Through!

POWER, ruggedness and speed are concentrated in "Clevelands" in a smaller, more mobile, more easily-handled "package," because of sound, modern design coupled with thorough usage of the toughest, longest wearing materials in the market.

This explains why "Clevelands" continue to be the preferred equipment on so many projects, current and recent, where tough terrain and severe soil conditions are encountered, or where the congested conditions in city or suburb require compactness and flexibility.

•

"CLEVELAND'S" NATIONAL DEFENSE COOPERATION IS 2-FOLD—

1. **Supplies equipment for Defense Pipelines and all branches of the United States Military and Naval Services.**
2. **Releases thousands of tons of vitally needed steel for armament, tanks, ships, etc., because of weight-saving design and construction.**

THE CLEVELAND TRENCHER CO.

20100 ST. CLAIR AVENUE *"Pioneer of the Small Trencher"* CLEVELAND, OHIO

WPB Drafts Stored Pipe And Steel Into War Time Use

Large quantities of pipe and steel plates owned by Natural Gas Pipe Line Co. of America, Chicago, and stored at the plant of A. O. Smith Corp., Milwaukee, Wis., were ordered removed by the War Production Board for utilization in war projects. This material was originally intended to be used in bringing natural gas into Wisconsin if and when the Natural Gas Pipe Line Co. obtained permission.

This firm, which delivers gas to the Chicago area, last year made an unsuccessful bid for a permit from the State Public Service Commission to enter Wisconsin. It had already laid a branch line to the state border.

A complaint by Walter Holder, business representative of the AFL Coke and Gas Workers Local Union No. 18546 and a member of the parties opposed to the introduction of natural gas into Wisconsin, prompted the WPB to take action in removing the pipe.

GEORGE A. BURRELL

Consulting
Gas Engineer

Suite 1909
20 Pine St.
New York City

1936-42 5th Ave.
Pittsburgh, Pa.

Advertising Costs Allowed in War Contracts

THE Procurement Policy Division of the War Production Board last month clarified for the Association of National Advertisers the status of advertising as an allowable item of cost in government negotiated contracts. The Division has issued instructions to guide price adjustment boards in determining such allowable advertising costs.

Under these rules the holders of a cost-plus-fixed-fee contract will be allowed "reasonable expenditures" for industrial or institutional advertising, which properly can be classified as an operating expense incurred for reasons of policy. Definition of "reasonable expenditure" will be substantially the same as that announced by the Secretary of the Treasury. A contractor who is in doubt as to the admissibility of his advertising expense should take the question up with the contracting agency with which he is dealing.

Advertisers who have been *advertising right along* will probably have little difficulty in continuing an established policy. Procurement officers are given to scrutiny of advertising content, and it is certain that *advertising of value to the company* will stand a much better chance of being allowed.

Two difficulties have been (1) that most industry executives who negotiate government contracts know little about advertising and do not try to have advertising expense included as a cost; (2) most advertising men do not know whether their companies are operating on a cost-plus-fixed-fee or fixed-price contract. The difference in type of contract is important.

When a fixed-price contract is being negotiated, field procurement officers frequently request a breakdown of costs. In such cases, manufacturers should include advertising expenditures in overhead rather than as a separate cost item, since it is often not practical to determine exactly what part of advertising expenditures should be charged against a particular contract.

Donald M. Nelson, head of the War Production Board, pointed out that no set formula can be devised to govern all cases and that the "rule of reason" must apply to each particular case. WPB, he said, does not wish to set up arbitrary rules which might work undue hardship on manufacturers converted to war work who desire to preserve their trademarks and good will.

In conclusion, advertisers might be warned against paying too much attention to the so-called "green book." This booklet, "Explanation of Principles for Determination of Costs Under Government Contracts," was written last spring by two former WPB employees as *their* interpretation of Treasury Decision 5000 which has been in existence since 1934 and has been used in many government cost-plus contracts.

■ ■

Hearing Set for Nov. 25

The Federal Power Commission on Oct. 20 announced its orders setting hearing for 9:45 a. m., Nov. 25, in the Commission's hearing room at 1800 Pennsylvania Ave., N. W., Washington, on proposed increases in the wholesale rates for natural gas sold by the Allegany Gas Co., Port Allegany, Pa., to Crystal City Gas Co., Corning, N. Y.; North Penn Gas Co., Port Allegany, Pa.; and New York State Electric & Gas Corp., Ithaca, N. Y. The orders announced suspend the proposed rate schedule providing for the increases pending outcome of the hearing.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of *GAS*, published monthly at Los Angeles, California, for October 1, 1942.

State of California, County of Los Angeles—ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Jay Jenkins, who, having been duly sworn according to law, deposes and says that he is the publisher of *GAS* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Jay Jenkins, 1709 W. 8th St., Los Angeles, Calif.

Managing editor, Arthur Rohman, 1709 W. 8th St., Los Angeles, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Western Business Papers, Inc., 1709 W. 8th St., Los Angeles, Calif.
Jay E. Jenkins, Los Angeles, Calif.
James E. Jenkins, Los Angeles, Calif.
Craig Espy, Dallas, Texas.
George H. Finley, Santa Barbara, Calif.
Arthur Rohman, Los Angeles, Calif.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is..... (This information is required from daily publications only.)

JAY JENKINS,
Publisher.

Sworn to and subscribed before me this 28th day of September, 1942.

(SEAL) SUSAN McCONNELL.

(My commission expires June 8, 1943.)